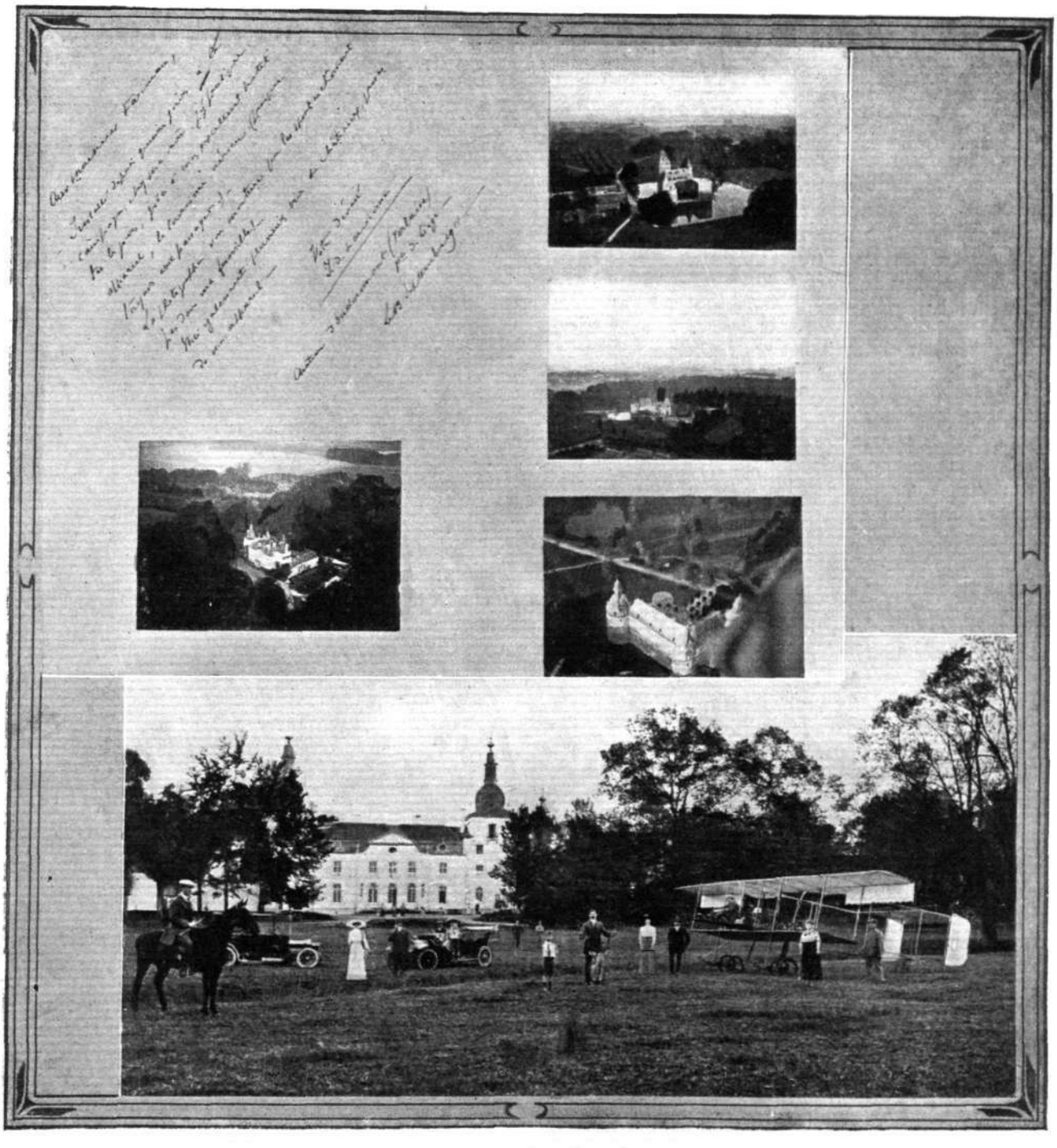
FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 144. (No. 39. Vol. III.) | SEPTEMBER 30, 1911. | [Registered at the G.P.O. as a Newspaper.] | [Weekly. Price 1d. Post Free, 1½d.]



AVIATION AS A PASTIME.—Many months ago we stated that the time had arrived when flying could, under reasonable conditions, be regarded as a legitimate pastime to be indulged in by the wider circle of the public comprised in the sportsman, landed proprietor, &c. Corroboration of this comes in the above interesting photograph from Belgium, showing that well-known all-round sportsman, Chevalier Jules de Laminne, and his up-to-date sporting equipment, including a Henry Farman biplane, at the Chateau d'Oudoumont, Verlaise, near Liege. Above are snaps of the castle from different points, secured from the Farman machine by the Chevalier when flying around his estate.

EDITORIAL COMMENT.

The Failure of the Big Dirigible.

An adverse fate seems to dog the big dirigible with a pertinacity that will not be denied. Disaster after disaster to these huge gas-bags comes to point the moral that the future of aircraft does not lie in their direction. While the aeroplane constantly gains in efficiency and in safety, until even now it is almost correct to say that flying is as safe as motoring given that proper care is taken by the aviator, we do not seem to have made a single step in advance so far as the airship proper is concerned. It scarcely needed the lesson of the collapse of "Naval Dirigible No. 1" to demonstrate the elementary fact that the big dirigible is a failure. We had learnt that from the experience gained with the *Morning Post* Lebaudy and the almost equally unfortunate Clement-Bayard, so that we can scarcely feel surprised at this latest catastrophe. On this side of the Channel the dirigible has been, not to put too fine a point upon it, an utter failure, and on the Continent it has been very little better in spite of the many long voyages under favourable conditions which have been accomplished. Before the aeroplane became the highly efficient organism it is to-day it was natural that the lighter-than-air type of flying machine should have attracted a great deal of attention from those who were seeking dominion over the air. The type of craft evolved was admittedly crude and cumbrous, but it was the best we could do, and at any rate it was capable of making ascents, and in good weather of being navigated to a set course instead of being at the absolute mercy of the lightest air that blew. The school which believed in the gas-bag as the airship of the future held, and rightly, that experiment and research might quite possibly lead to the evolution of a type which should be capable of safe navigation in all but the worst of weather conditions. But they had not reckoned with the rapid rise of the heavier-than-air type—a rise which has resulted in the complete overshadowing of the "aeronef" by the aeroplane. So completely has the one outbid the other for supremacy that we might almost say that the dirigible of anything like the dimensions of the unfortunate naval craft which was wrecked on Sunday is discredited and obsolete.

We do not blame the naval authorities for building this vessel. It must be remembered that she was laid down two years ago, when it was impossible to say wherein lay the future of flying. Continental powers were experimenting with airships of similar type, and to have held our hands while possible rivals were attempting to build up aerial navies would have been folly of the worst description. But things have progressed apace in the period that has elapsed since the navy embarked upon airship construction, and no amount of prescience could have foretold that aerial science would stand where it is to-day. Now that the lesson has been so drastically driven home, it may be hoped that our authorities will keep in mind the excellent maxim of the card-player relative to the cutting of losses. They have been generous in their allocation of money for the building of this experimental craft. It has proved a failure and the money has been wasted, albeit through no fault of anyone. It is just as necessary to-day as it was when it was decided to build the Vickers craft that we should keep up with the rest of the nations. They have practically abandoned the gas-bag, and are concentrating all their energies upon the development of the military aeroplane. Therefore we trust that our own authorities will rise to the needs of the situation, and alter the direction of their experimental work.

We have been careful to confine our condemnatory remarks to large craft, because we are not convinced that the lighter-than-air type is altogether without possibilities, but if it has any future at all we believe that it lies in craft of less ambitious dimensions than those of the unwieldy Zeppelins and Lebaudys. Certainly, while the latter have been leaving their bones dotted over the face of Germany and France, the smaller vessels of the Beta and Delta type have achieved some small measure of success. It may, therefore, be advisable to go on experimenting with them for a time, though we confess to being more than a little sceptical even with regard to that.

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"Circus-Flying."

If anything more were needed to drive the final nail into the coffin of the "Flying Meet," surely the shocking occurrences reported from America recently should serve to point the needed moral. In one case, the scene of which Norton, Kansas, Mr. J. B. Frisbie had made a flight on the day previous in which he sustained a fall which damaged his aeroplane, and on the day on which he met his death it was not working well and he decided against an ascent. But the crowd had paid to see flying, and against their getting their money's worth the life of an aviator more or less weighed as nothing. Mr. Frisbie was literally hounded into the air, with the result that his aeroplane came down from an altitude of about a hundred feet and he was killed before the eyes of his wife and children. It is difficult to write calmly of an occurrence like this. Crowds are inevitably brutal, even though in the aggregate they are composed of quite ordinary persons, but this one seems to have been even more brutal than the generality of such gatherings, and it is no wonder, as reported, that the poor wife, as she supported her dying husband's head, called on them as cowardly murderers to look upon their handiwork. In another case, this time at Dayton, Ohio, an aviator who had made several flights at a function described as a "county fair" declined to go up again because his motor was giving trouble. As in the previous case, the crowd wanted its money's worth and "barracked" the unfortunate airman until he was stung into attempting another ascent. The result was an explosion which brought man and machine to earth in a mass of flame, the victim of the crowd's callousness being dragged from the wreckage dead. It is such occurrences as these which make us feel thankful that the type of exhibition which has claimed all too many victims is entirely discredited in our own country.

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Aerial Legislation in India.

BASED on the same lines as the Indian Arms Act, and containing similar clauses to the Aerial Navigation Act passed in the British Parliament just before the Coronation, a Bill has been introduced into the Indian Viceroy's Council, by Mr. J. L. Jenkins, controlling the manufacture, sale, importation and possession of airships by a system of licences. He maintains that these precautions have become necessary for military purposes. The Bill was passed on September 22nd.

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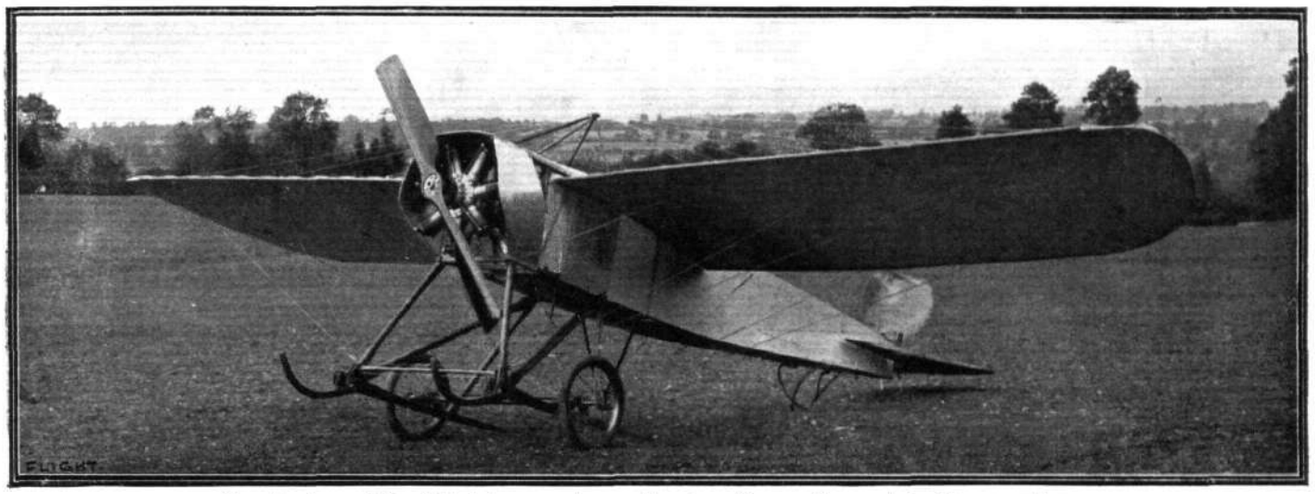
THE BRISTOL MONOPLANE.

As more rumour than fact has generally formed the basis of current aerodrome discussion of the merits of the new Bristol monoplane, the accompanying illustrations and description of its construction may prove of exceptional interest. The machine, itself, is undoubtedly the centre of many thoughts, but its comparative inaccessibility on Salisbury Plain does not contribute much to the general fixing of ideas as to its leading characteristics.

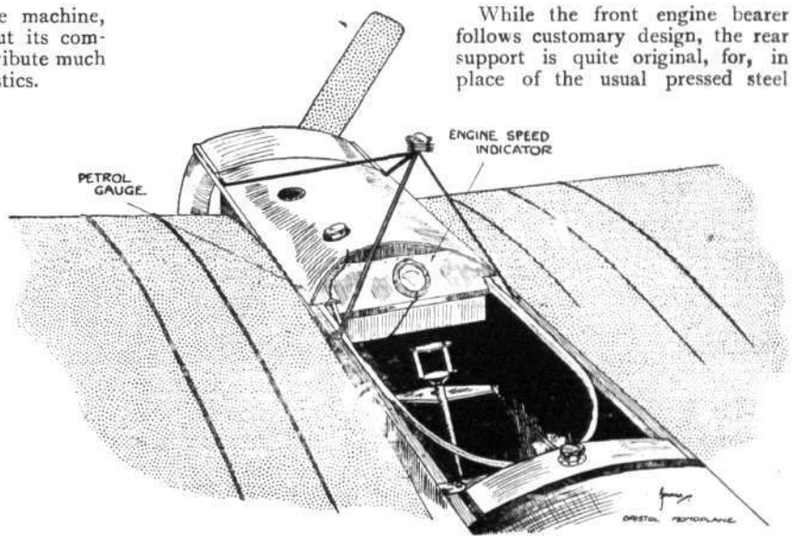


Front view of the Bristol monoplane, showing the engine and landing carriage.

To those who follow the trend of aeroplane design and are sufficiently *au fait* with events to know that Pierre Prier - one time Blériot pupil, now one of the best of modern pilots—is now associated with the British and Colonial Company, it will come as no surprise to learn that a good deal of the credit for this model is due to him. Indeed, the machine itself is in some respects not unlike his old Blériot mount, although needless to say it shows marked originality at many points, more particularly in respect to the tail planes and under-carriage. In the former, a fan-shaped surface is pivoted about a horizontal axis to perform the double duty of stabiliser and elevator, thereby departing from the common practice of using a hinged extension to a fixed plane.

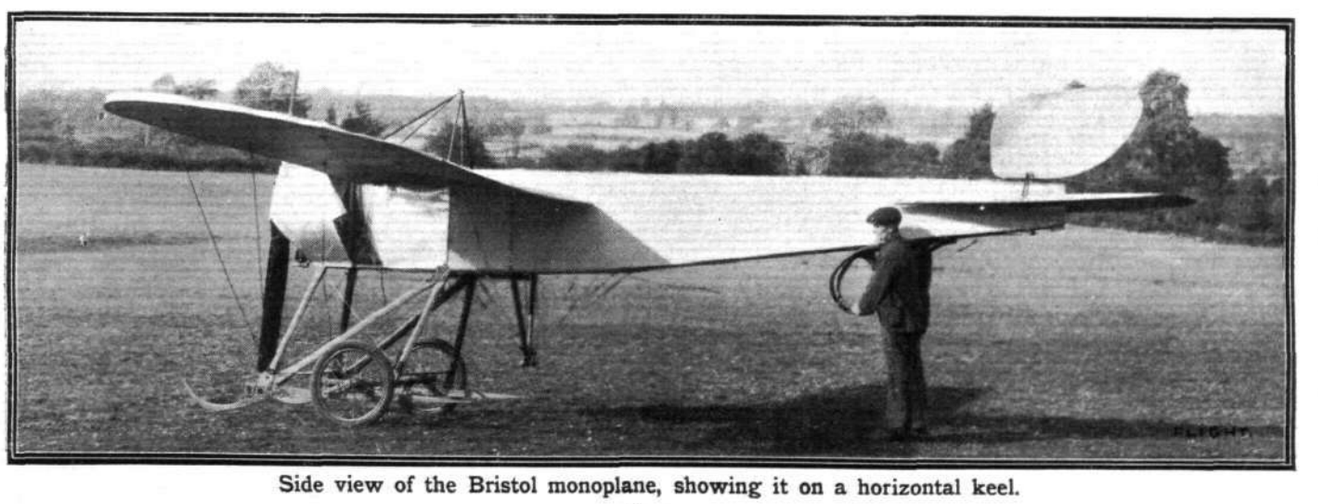
The main body is constructed on the usual box girder principle, with the important differences that strainers are altogether dispensed with, and that the longitudinal members are not pierced except by small wooden screws that serve to keep in position the steel plates to which the cross-bracing wires are attached.

At the forward end of the body is mounted the 50-h.p. Gnome engine, with its direct driven 8 ft. 6 in. Normale propeller. There is no support between the engine and propeller, a feature that renders the motor extremely accessible for tuning or cleaning purposes.

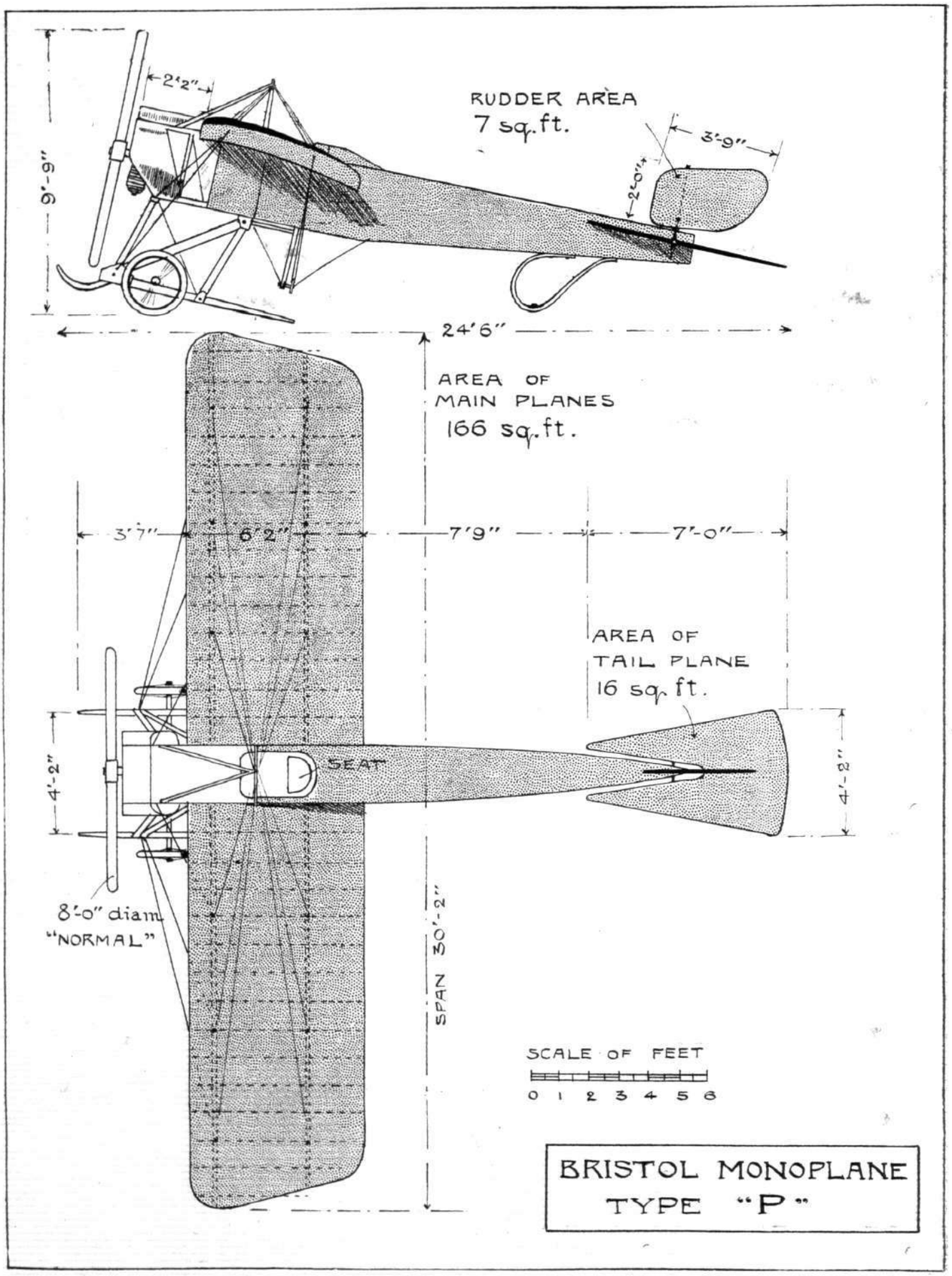


Sketch of the Bristol monoplane illustrating the accommodation in the pilot's cockpit and the arrangement of the auxiliary petrol tank. The wires from the *cabane* are omitted for the sake of clearness.

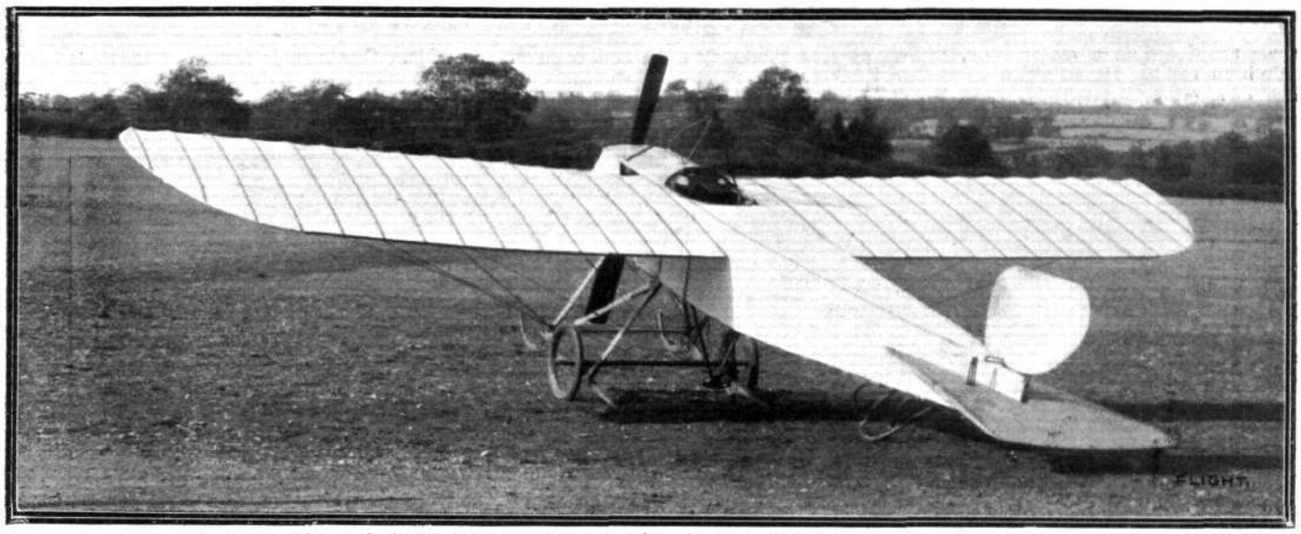
While the front engine bearer follows customary design, the rear support is quite original, for, in place of the usual pressed steel



Side view of the Bristol monoplane, showing it on a horizontal keel.



THE BRISTOL MONOPLANE.—Plan and side elevation to scale.



Rear view of the Bristol monoplane, showing the tail elevator and the rudder.

mounting, the Gnome crank-shaft is anchored in position by four adjustable steel rods, arranged diagonally, in tension. An aluminium dome above the engine prevents any oil reaching the pilot.

The landing carriage is of the skid and wheel variety, the common axle between the two wheels being flexibly attached to the skids by rubber shock-absorbers. Very little wire bracing is resorted to in the under-carriage as rigidity is given to the structure by diagonal struts.

Projecting in front are two short upturned skids, which pivot about horizontal bolts against the action of strong steel compression springs. The idea is sound besides being original, for should a landing be made at too steep an angle these skids will give upwards and ease the descent. Rigid skids of this type are unsatisfactory in that they have the habit of digging into the ground and snapping off short under such conditions. The wings, which have a slight dihedral angle, are of notably strong construction.

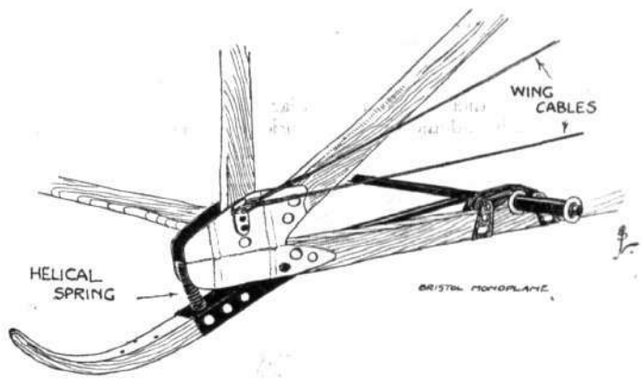
The front and rear spars are fashioned from steel tubing of circular section cored with wood.

Three trusses of substantial stranded steel cable attached to the front spar of each wing take the weight of the machine in flight. The two outer "haubans" are connected to a fitting on the under-carriage skids, and the inner one is attached to a clip round the bottom main body "longeron." Both the camber and the angle of incidence of the wings are exceptionally slight, and to these features must be attributed the fine turn of speed that the Bristol monoplane exhibits. A pyramid of oval-section steel tubing supports the weight of the wings, the warp-compensating wire from the rear spar passing through tubes brazed in a fitting provided at its apex.

The fan-shaped elevating-surface is balanced, in order that its operation should call for little exertion on the part of the pilot. Steering laterally is effected by a balanced vertical rudder mounted at the rear extremity of the main body. The tail unit is protected from contact with the ground by a double skid of rattan cane.

Control, in the three dimensions of elevation, lateral balance, and direction, is maintained by the usual universally-jointed vertical lever and pivoted foot bar, which is employed by almost every monoplane descended from the paternal Blériot. All wires leading to the controlling organs are fitted in duplicate, thereby reducing to a minimum the risk of mechanical failure in the air. The pilot is kept well acquainted with the condition of his fuel supply by a petrol gauge fitted to a small dashboard before him, and a revolution indicator by its side tells him his engine speed.

As soon as the Bristol single-seater emerges from its trial stage, and its construction upon standardised lines is embarked upon, the British and Colonial Aeroplane Co. propose to carry out experiments with a passenger-carrying monoplane of similar design. Such a machine should be most valuable for military reconnaissance work, both on account of the wide range of view that is obtained from the pilot's seat, and also because of the exceptional speed that it is hoped, and with good reason, such a machine would attain.



Sketch illustrating the flexible front skids of the Bristol monoplane and the method of springing the single axle. To avoid complication in the sketch the wheel is omitted, but its hub indicates its position.

FUNERAL OF LIEUT. CAMMELL, R.E.

WITH full military honours, the remains of Lieut. R. A. Cammell, R.E., were laid to rest in the garrison cemetery at Aldershot on Thursday of last week. The chief mourners were the mother, sister and cousins of the unfortunate officer. Six brother officers of the Royal Engineers, including Lieuts. C. M. Waterlow and H. R. Reynolds, acted as pall-bearers. General Sir H. L. Smith-Dorrien, and Major-General H. M. Lawson were represented by staff officers and Major-General S. H. Lomax attended in person, while each unit of the Aldershot command was represented. Among others present were Col. J. E. Capper and Major Sir Alexander Bannerman, past and present commandants of the Army Balloon School, and Mr. Mervyn O'Gorman, superintendent of the Army Aircraft Factory, Capt. A. D. Carden, Capt. E. M. Maitland, Capt. C. J. Burke, Capt. P. W. L. Broke-Smith, Lieut. A. G. Fox, Lieut. B. H. Barrington Kennett, Mr. de Havilland, Mr. S. F. Cody, &c. There were a very large number of wreaths, including those from the Royal Aero Club, the Air Battalion Royal Engineers at Chatham, naval officers at Eastchurch, &c.

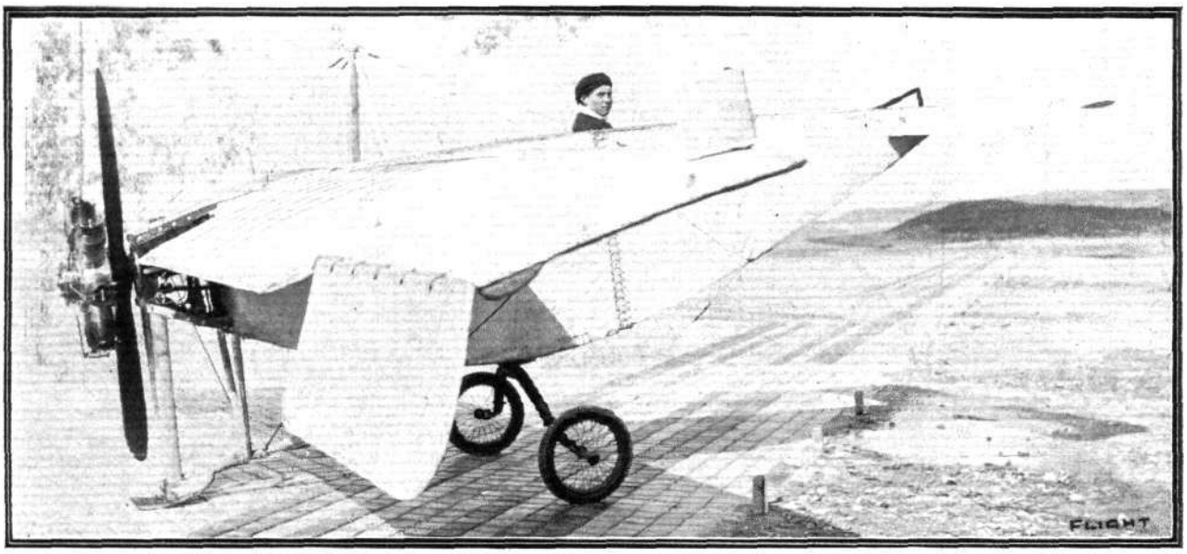
THE AERIAL POST.

THE experimental Aerial Post between London and Windsor finished up on Tuesday evening, when Mr. Hamel started from Hendon at 5.18 and landed at Windsor at 5.44, with the last bag of correspondence. He left Windsor again about a quarter of an hour afterwards, and was back at Hendon after an absence of only 57 minutes. There was a little *contretemps* at the end of last week, as Mr. Hamel refused to fly until something had been done for Mr. Hubert, who was injured during the first day of the post. Eventually the matter was amicably settled by the organising committee agreeing to recommend for the approval of the Postmaster-General that £500 of the net proceeds be given to Mr. Hubert, and on Monday the post was resumed by Mr. Hamel taking a couple of the remaining bags of mails from Hendon. He started at 10 o'clock, and got to within about five miles from Windsor, when engine trouble developed, and he had to descend at Langley, completing the distance to Windsor in a motor car. The label attached to the first bag of mails has been sent by the Windsor Postmaster to the King, by whom it has been gracefully accepted.

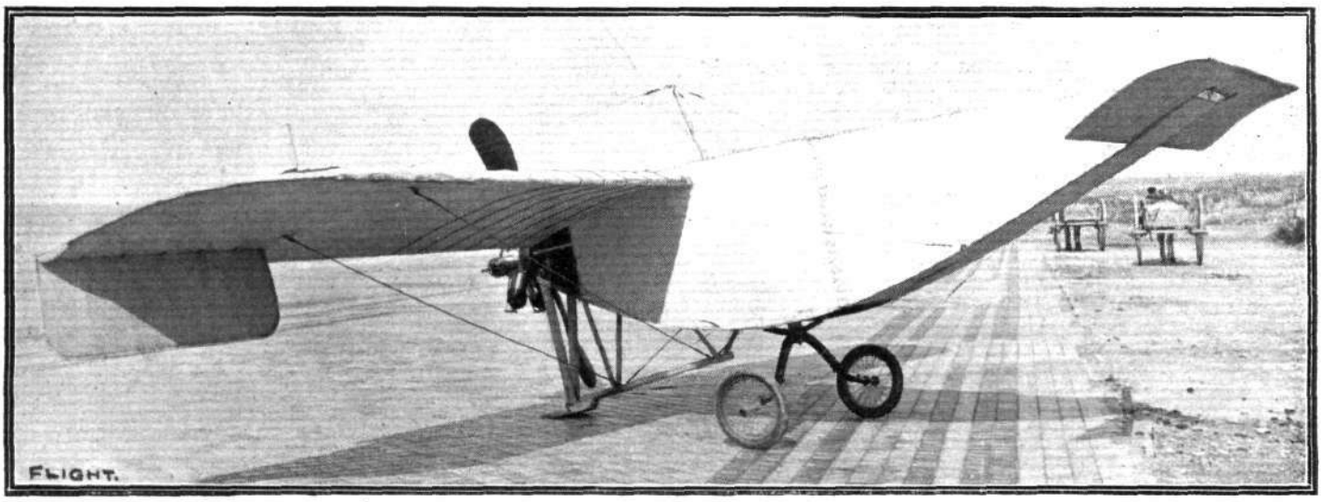
NEW BLÉRIOT "CANARD."

As we mentioned in a recent issue, the report that Blériot has again been turning his attention to the production of a monoplane of a tail-first type is no *canard*, and we reproduce herewith photographs taken of this interesting machine at Hardelot, near Boulogne, where the machine is now undergoing tests. The landing carriage is an absolute departure from orthodox Blériot design, and, together with the peculiar steel construction which comprises the tail skid and serves as a bridge to which the wings are braced, seems to indicate the effect of the Nieuport on current practice. Steering to the right and left is effected by miniature rudders, mounted vertically at the ends of the wings, and lateral balance is maintained by ailerons which present a slightly convex surface on the underside. One notable feature of the design is its shortness of overall length, being only 5·50 metres from tip of elevator to propeller. The wings span 8·90 metres, and have a carrying surface of 12 sq. metres. A 50-h.p. Gnome engine, direct coupled to an Integrale propeller, supplies the propulsive effort. Its weight is 400 kilogs.

In one of the views the rear disposition of the Blériot "Canard" is clearly seen, as also the manner in which the engine is mounted.



NEW BLÉRIOT "CANARD."—Three-quarter view, as seen from behind.



NEW BLÉRIOT "CANARD."—Three-quarter view, as seen from in front.

The oil system inspection glasses seem to have been mounted in rather a unique position, one calling for acrobatic contortion on the part of the pilot, should he wish to acquaint himself with the way his oil pump is working.

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The Trans-American Flight.

THE attempts which have so far been made to cross America in an aeroplane have so far not met with much success. Mr. Robert Fowler decided to give up after reaching Alto, in Nevada, Mr. James Ward gave up after getting 308 miles on his way from New York, while Rodgers had a bad smash at Huncock, about 170 miles from New York.

A Transatlantic Proposal.

OF course, it was but to be expected that before long someone would seriously talk of crossing the Atlantic *en aeroplane*. According to advices from America, Hugh Robinson, one of the Curtiss aviators, is now making his preparations to carry out such a trip next spring. He intends to use one of the Curtiss hydro-aeroplanes, with which he has been making some very useful flights lately. It is proposed to station boats at intervals along the route, with supplies of petrol, oil, &c. But in the present stage of the science requiring such precautions, is it worth it?

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Aerial Mails in New York.

IN connection with the New York Flying Meeting which opened on Sunday, an Aerial Post was inaugurated between the Nassau Boulevard Aerodrome to Garden City, a distance of about five miles.

A Study of Bird Flight

By Dr E.H.Hankin. M.A. DSc.

CHAPTER XVII.—The Nature of the Problem to be Solved.

IT must be obvious that the facts hitherto adduced have led to no explanation of the nature of soarability. But they have shown that there is a problem to be solved, and have given us some idea of its nature. Definite proofs have been brought forward that soaring flight cannot be explained by the assumption that the bird takes advantage of chance currents of air. No reason has been discovered for believing that soaring birds have any mysterious senses or instincts. There is a mystery, but it is one that has to do not so much with the bird as with the source of energy. If we are not dealing with a new form of energy we are at least dealing with a new and hitherto unsuspected method by which sun energy (in the case of sun soarability) can be transformed into mechanical power.

Some time ago a speaker at a learned society stated that he had once seen soaring birds come to rest as soon as a cloud came over the sun. The sun, he said, causes upward currents of air. Therefore soaring flight is due to these currents. Therefore also, man having no power of appreciating these currents can never hope to imitate soaring flight. This line of argument can I think be criticised on three grounds. Firstly, it is a case of using one unknown to explain another unknown. Secondly, it is generalising on a single experience. Thirdly, it concludes with a rash prophecy that at least is out of place in a scientific argument. The question of the nature of soarability requires and deserves more serious treatment. There is very little probability of its nature ever being cleared up by any single and sensational discovery. All we can hope for is that our knowledge of soarability may be advanced by observation and measurement. It will be of interest to indicate briefly what lines of research seem likely to add to our knowledge of the subject.

As I have elsewhere stated (Chapter XII), it is impossible to imagine how a bird can take energy from soarable air if such air is homogeneous, unless such air is altered by the passage of the bird's wing. Hence there are two possibilities to be considered.

Firstly, it is possible that soarable air is heterogeneous, that is to say, that certain parts have movement relatively to other parts. In other words, it is possible that the energy supply is due to the bird acquiring the movement of eddies. As already explained such eddies must be minute in size and uniformly distributed.

The rising of small masses of air under the influence of sunshine I have elsewhere referred to as "heat eddies." Heat eddies, as a rule, commence a few minutes before the air becomes soarable, and gather strength as soarability increases. Hence it is necessary to consider the possibility that heat eddies are the source of soarability. Perhaps, and indeed probably, these heat eddies can lift a piece of gossamer. They certainly cannot lift a feather. Whether or not they can support a bird of 5 kilogs. weight, and lift it within a few minutes to a height of 1,000 metres, is a question that requires to be settled by evidence. I propose to devote a couple of chapters to facts relevant to this matter.

Secondly, if every attempt should fail to prove that soarability is due to the movement of small masses of air, the second possibility must be considered, namely, that the air is altered by the passage of the bird's wing. It is conceivable that soarable air contains unstable groups of molecules or some unstable chemical compound that can decompose explosively by the passage of a vulture's wing, and so furnish energy for soaring flight. This possibility can be tested by the following method. An explosion of gaseous matter is likely to exert its energy perpendicularly to a flat surface. In fast flex-gliding the wing is flat. Hence, if in this form of flight energy is derived from a sort of continuous explosion, one might expect to find evidence that the force of soarability is exerted at right angles (or nearly so) to the surface of the wing. In other words, one might expect the angle of incidence to be in the neighbourhood of 90°. Hence it is necessary, firstly, to discover the relation of the centre of gravity to the area of the wing in ordinary gliding flight in which the angle of incidence is small. Secondly, it is necessary to discover what this relation is in cases in which the angle of incidence approaches 90°. Thirdly, it is necessary to see whether the relation in this second case bears any resemblance to the relation that obtains in flex-gliding flight. I shall bring forward evidence relating to this matter.

Lastly, it is possible that something may be learnt by comparing the disposition of the wings when the bird is soaring with the disposition employed when the bird is no longer taking energy from the air. From this point of view it will be of interest to study in detail the different modes of descent employed by soaring birds. Chapter XXIII will be devoted to this matter.

I take this opportunity of expressing my thanks to the Advisory Committee for Aeronautics for having kindly given me information on certain points that I submitted to them.

CHAPTER XVIII.—Wing Depression.

In an earlier chapter I described two kinds of movements that are used by birds for steering in the horizontal plane. The first is the "dip," which has been shown to be due to a rotation of the wing tip. The second movement is the "depression." The question arises whether the depression observed is an actual depression of the whole wing caused by direct muscular action, or whether it is due to a rotation of the wing, and the resulting depressing effect of the air striking its upper surface.

That the depression is a movement of the same nature as the dip, namely a rotation, is indicated by the following facts. Firstly, in the case of cheels the two modes of steering are usually combined. If a cheel is gliding with wings extended, steering may occur by a wing depression, or by a depression combined with a dip. I have no clear recollection of seeing a dip movement in a cheel without there being at the same time some appearance of depression of the whole wing.

Secondly, where, as in the case of vultures, the two kinds of steering movements are usually distinct, one or the other may occur apparently under the same conditions. For instance :—

June 12th, 1910.—At Ballia Ravine, 12.6.—A vulture started from a tree near me and glided in a nearly straight line for about two miles. During the first part of this glide, two steering movements were seen, one a dip, and the other a depression of the whole wing. The latter produced the stronger change of course.

Thirdly, in the case of the double dip movement, it is often difficult to see how far it is due to a movement of the wing-tip and how far to a depression of the whole wing. Only after my arrival in Naini Tal did I have opportunities of making observations with definite results, as shown by the following evidence :—

June 19th, 1910.—Ballia Ravine. At 12.30.—Sun shining. A brown vulture while ease gliding down the valley showed a momentary depression of both wing-tips, presumably for the purpose of increasing speed.

A lammergeyer seen making a double dip. This was clearly seen to be due to a depression of the whole wing, and not merely of the wing-tips.

June 21st, 1910.—Ballia Ravine. At 3.23.—A lammergeyer seen to make a double dip twice over at short intervals. These dips appeared clearly as a bending down of the wing at the carpal joint. At the time the vulture was gliding downwards at speed. The alulae were not extended. Then it again made a double dip, which was as clearly seen to be not at the carpal joint but at the shoulder joint. A minute later it made another double dip, which appeared to affect both shoulder and carpal joints.

Hence double dips may be seen, either as a dip of the wing-tips caused by rotation of the phalangeal quills, or as a dip at the carpal joint certainly due to rotation of the outer part of the wing, or as a dip of the whole wing in which rotation may also play a part.

I also attempted to settle the matter by direct observation. I will give my records in full, as it is interesting to see how much practice was required before I could make this somewhat difficult observation. My notes include various surmises, of no value except as showing that I was uninfluenced by any particular preconceived idea while carrying out the observations. My diary extracts are as follows :—

July 18th, 1910.—Agra, at 6.40 a.m.—Four cheels up near. They were circling at low level with occasional flaps. Steering was by whole wing depression. During the depression the wing, when seen from behind, looked thicker than it does in gliding flight.

July 24th, 1910.—At 9.47 a.m.—A cheel gliding up wind. It gave the impression that on dipping the whole wing the secondaries (that is to say the hinder or free ends of the secondaries) went up. Also in several other cases the depression seemed to be accompanied by an appearance of thickening. This suggests that the depression is caused by a rotation of the wing.

July 27th, 1910.—At 5.20 p.m.—A cheel during a wing depression showed relaxation of secondaries. Perhaps this was due to a twisting of the wing.

August 5th, 1910.—At 7.4 a.m.—A cheel wind-facing made a

whole wing depression. This gave the same impression as the movement of one of the wings in a double dip.

At 7.24.—A cheel making a whole wing depression showed slight movement upwards of secondaries, while at the same time the wing tip went downwards as in a dip movement. Does a whole wing depression mean a slight arching of the wing, which would involve less efficiency, and, therefore, a steering effect?

August 14th, 1910.—At Futteypur, 8.45 a.m.—An eagle seen gliding up wind. Twice a whole wing depression was seen clearly to be accompanied by a rising of the free or hinder ends of the secondaries. Because the wing depression is not accompanied by any increase of flexing, therefore the wing depression must be due to a twisting of the whole wing. (Facts to be described in a later chapter will make clear the meaning of this argument.)

August 16th, 7 a.m.—A cheel while gliding showed an elevation of the free ends of the secondaries, that is to say, rotation of the wing, which was seen to be followed by depression. I was very astonished at being able to see this.

This last observation was quite unexpected. Though I have no doubt that it represents accurately what actually happens in a wing depression, I am inclined to think that it was of the nature of an accident that the rotation of the wing was presented to my consciousness as a phenomenon preceding the depression. Since making this observation I have frequently been able to see that in a wing depression the front edge of the wing is depressed and the hind edge is slightly elevated. There can, therefore, be no doubt that the movement consists in a rotation of the wing, and that the depression ensues when the wing is no longer supported as before by the air pressure from below.

The above observations, therefore, point to the conclusion that birds may steer in the horizontal plane, either by rotation of the wing tip or by rotation of the whole wing.

It is necessary to consider possible criticisms of this conclusion.

1. When describing the flapping and other movements connected with perching, I shall show that the wing, when in use, can be rotated through an angle of nearly 90 degrees. There is, therefore, independent evidence of wing rotation.

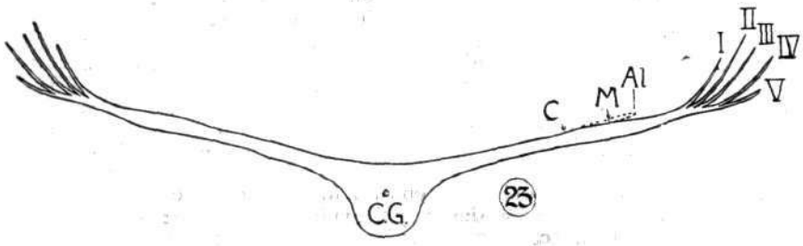

Fig. 23.—Transverse section of a vulture when circling in fully soarable air. CG, position of centre of gravity. C, carpal joint. M, metacarpal joint. Al, position of alula, shown by dotted line. I, II, III, and IV, tips of phalangeal quills pressed upwards by pressure of the air. V, position of metacarpal quill tips.

2. That the movement observed cannot be due to relaxation of the secondaries of the depressed wing, that is to say, to a diminution of camber, will be shown when I come to describe the mechanism for altering camber in a later chapter.

3. That the rotation of the wing, or of the wing tip, for steering in the horizontal plane is not accompanied by a rotation of the other wing, or of the other wing tip in the opposite direction, will shortly be proved.

4. In a later chapter I shall have to describe cases in which a slight relaxation of the secondaries of the outside wing may possibly play some part in steering.

5. I hope on a later occasion to describe my observations on the conditions under which tailless cheels are unstable. It will be seen that the facts observed lead to the conclusion that movements of the tail do not produce steering effects.

6. Cheels may on rare occasions show sudden rotation round the dorso-ventral axis through as much as 90°, or even a larger angle. I shall describe these rotations in Chapter XXXIII, and shall show that they have nothing in common with ordinary steering movements.

CHAPTER XIX.—Canting.

Warping of the wings of an aeroplane to equal amounts in opposite directions may conveniently be referred to as "Wright's method."

There is a certain resemblance between the warping of the wing of an aeroplane and the rotation of the wing-tip found in birds. One would therefore expect that birds use Wright's method for preserving lateral stability, or, as it may otherwise be expressed, for producing or checking rotation round the longitudinal axis.

But I am acquainted with no evidence that Wright's method is used by birds. That is to say, during a dip movement of one wing, there is no evidence of any upward rotation of the front edge of the wing-tip of the other wing. At the time that I made the following observation, I thought that I had found an instance of the use of Wright's method :—

June 30, 1910.—Ballia Ravine. 2.30.—High level clouds only. A few vultures perched, and one in sight in the air. Slight sunshine. A lammergeyer seen circling near. The first quill feather of the outside wing was turned up while the bird faced the wind, but not when the bird was travelling with the wind. The gradual return of the end of the feather to the horizontal position was clearly seen as the bird turned in each of several successive circles. The wind at the time was nearly imperceptible, but occasionally moving leaves slightly.

Further experience has shown that the above observation cannot be regarded as an instance of the use of Wright's method. The return of the first quill feather to the horizontal position, mentioned in the above extract, was not its return to the normal position. On the other hand, as shown in Fig. 23, the tips of the phalangeal quills, when circling, are normally turned upwards. The first quill, in the above instance, assuming the horizontal position was of the nature of a half dip movement, as will be further described and explained in a later chapter. The range of movement observed in this instance of the first quill feather was probably less than two inches. The bird was probably of nine feet span or more.

That canting in soarable air is not merely a consequence of travelling on a curved course with the centre of gravity below the centre of effort of the wings is shown, firstly, by the facts of canted flex-gliding. In this form of flight, as elsewhere described, the bird is canted though travelling in a straight line. Secondly, a similar conclusion can be drawn from the phenomena shown in circling where the amount of canting is inversely proportional to the speed.

Parrots and pigeons in fast flapping flight on a curved course are always canted. I have seen an adjutant bird become canted while flapping and then cease flapping and begin circling. This observation makes it improbable that the canting was produced by any movement of rotation either of the wing or of the wing tips, as will be apparent when I come to describe the facts of flapping flight.

In a later chapter, when describing "dropping turns," I shall mention cases in which canting is produced by momentary increase of flexing of one wing. This acts simply by decreasing the supporting area of the wing, which, therefore, drops a short distance through the air, producing the canted position. In Chapter XXI, I shall describe cases in which canting is produced or removed by "arching" of one wing.

Of the different methods used by birds for meeting a puff of wind, the following method, that may be described as "wind-canting," is of interest. Supposing a cheel is ease-gliding to windward against a strong wind. As it gradually glides into an ascending current of air reflected upwards from a tree or building, it is obvious that at a particular moment when the front part of the wing is more affected by the ascending air than the back part, there must be a tendency for the bird to be rotated upwards round its transverse axis. That is to say, it must tend to rotate round this axis in such a way that the beak tends to go up and the tail tends to go down. As this occurs (or appears to occur), the cheel may be seen to rotate itself on its dorso-ventral axis through about 90°. The consequence is that the bird avoids being tipped up round its transverse axis. That is to say, its angle of incidence by this simple manœuvre has been kept normal. But the bird has become canted, and is now gliding in a direction at right angles to the wind. Sometimes a dip movement of the leeward wing may be seen, and the bird then gradually turns off and glides away to leeward. While thus gliding away to leeward it loses its canted position and returns gradually to a level keel. I have seen a similar method of dealing with a puff of wind in "storm soarability" in cases in which there was no evidence of any upward current. In such cases of storm soarability I have occasionally seen the bird make steering movements of such a nature as would tend to check the rotation round the dorso-ventral axis.* It is therefore doubtful whether the rotation round the dorso-ventral axis is due to any action on the part of the bird. Further light will be thrown on this point by the facts to be described in the next chapter.

* Instead of turning off from a puff of wind, a bird may cope with it by adopting the disposition for increased speed. That is to say, it remains facing the wind, but elevates the furled tail, places the wings dihedrally down, increases their flexure, and relaxes the secondaries, that is to say, decreases the camber. On two occasions, in addition, I have seen momentary lowering of the legs, but I am not sure whether this movement had to do with meeting a squall.

(To be continued.)

AIR-CRAFT IN NAVAL WARFARE.

OF what is the aeroplane capable? It can rise from the water, fly with a passenger 200 miles out and home again at a speed of 50 miles an hour. To what use can such a machine be put in naval warfare?

Bomb-dropping on warships is not likely to be effectual. Any aeroplane should be kept at at least 3,000 ft. by massed and controlled rifle-fire. The difficulty of taking up a position on a moving ship in a wind must be considerable. And if a hit is scored, what of it? A 300-lb. bomb, dropping from 6,000 ft., strikes with a velocity of 620 ft. a second. An 8-in. gun, at 12,000 yds., does more than this, and an 8-in. gun at 12,000 yds. does not do much harm when it hits. 200 lbs. of guncotton exploded by a torpedo on a ship's bottom, well tamped by water, blows a bit of the bottom in, but probably does not sink the ship. What then will guncotton do on her upper-deck? There is no future for bomb-dropping on warships.

Naval works ashore are more open to such attack. Incendiary bombs need not be very heavy, and dropped into a dockyard store or an oil fuel tank cannot fail to cause inconvenience. The caissons of docks and canals should also prove suitable targets.

The aeroplane's best chance of excelling lies in scouting. She can see over brick walls no one else can see through. Released from an enemy's cruiser some ten miles away, she can fly over a harbour, record every ship in dry dock or out in the stream, inspect the work on the ships, perhaps catch the fleet preparing to go to sea, and get back on board again in three or four hours. So much is practicable to-day.

Again, a cruiser sighting smoke on the horizon, the dark little clouds at regular intervals that mean a fleet. To-day she would close cautiously, endeavouring to count the ships, make out their class and formation, course and speed. Before her work was half done she would probably be driven back. But if she could only stop and loose an aeroplane, it could quickly rise, and from its height gain all the necessary information, with an accuracy unobtainable any other way. Then a swift return to her ship, which might all the while be pelting full speed for home and safety, and who would wireless her news on to the proper quarter.

As to submarines, the turbid waters of the Channel and the North Sea would hide a submarine as effectually as soapy bath water does the nail-brush. In blue water, though, they will probably be visible, and the presence of friendly aeroplanes will soothe the nerves of any fleet expecting submarine attack. And here the aeroplane in its bomb-dropping capacity may come in. She can fly down to the very surface of the water, unseen and unexpected by the submarine itself, and let go her guncotton bang over the boat. Submarines cannot dive deep to make themselves invisible and avoid attack, for not only must they occasionally put up their periscopes to makee-look-see, but the pressures at over 100 ft. deep, 50 lbs. to the square inch, are prohibitive. Up to date no other means of attacking submarines existed, and aerial attack seems to be the only possible one. Some years ago at the Hippodrome I saw a lady making rubies. In the process she used some fiercely burning powder. To exhibit the temperature of this powder she placed some on an iron plate over a glass cylinder of water closed at the bottom by another iron plate. Lighting the powder, it whistled through the top plate, through the water, and out through the bottom plate. It would interest and amuse me to treat a submarine with a large quantity of that powder, experimentally.

Further possibilities lie in gun control. At present the gun fire of a man-of-war is controlled by an observer, called a "spotter," high up the mast. He gets up the mast, a dangerous vibrating nasty smoky place, because from a height he can see better how far over or short his shots are falling than from a low position. The Yankees have even built enormous latticework towers for their "spotters," and we tripod masts.

In fact the observer gets as high up as he can, while retaining reliable communication with his transmitting station. To-day, the mast-head; to-morrow, an aeroplane.

Now, above all things, in gun control efficient communication is important. From aeroplane to transmitting station at first wireless seems simple, but it is too open to interference from the enemy's ships. A visual means of signalling will have to be adopted, probably by the Morse code.

Once single ship control from an aeroplane is obtained, the control of a whole squadron's firing will be much simplified, all ships being equally well able to take in the signals from one aeroplane.

Another way the aeroplane may make itself useful is in doing the duty of "passing ship," *i.e.*, pass the signals from one ship of a long line to another of the same line. This suggests the propriety of an Admiral hoisting his flag in an aeroplane!

The great disadvantage an aeroplane suffers from for fleet work is her lack of slow speed. An aeroplane cannot keep station on any man-of-war; nor in its present form is it ever likely that that will be possible, except under exceptional circumstances of wind. If the wind is with the fleet, the same speed, the 'plane would have to remain suspended in the air without motion through the air. Observing from a circling aeroplane must be very tedious, especially when many aeroplanes from each side are present. The helicopter or airship seems bound to develop for these purposes.

The quality most wanted in seagoing aeroplanes, besides those in land aeroplanes, is ability to rise from a heavy swell or choppy sea, or from the deck of a rolling ship. In many cases, when the wind is quite moderate enough for flying, the forecastle of a ship will be washed down if steaming head to sea, and so the aeroplane should rely on no help from the ship in this direction. The deck space needed should not be large, nor their stowing space great, or they will not be carried in all men-of-war, but only in special mother ships.

S. H. S. M.

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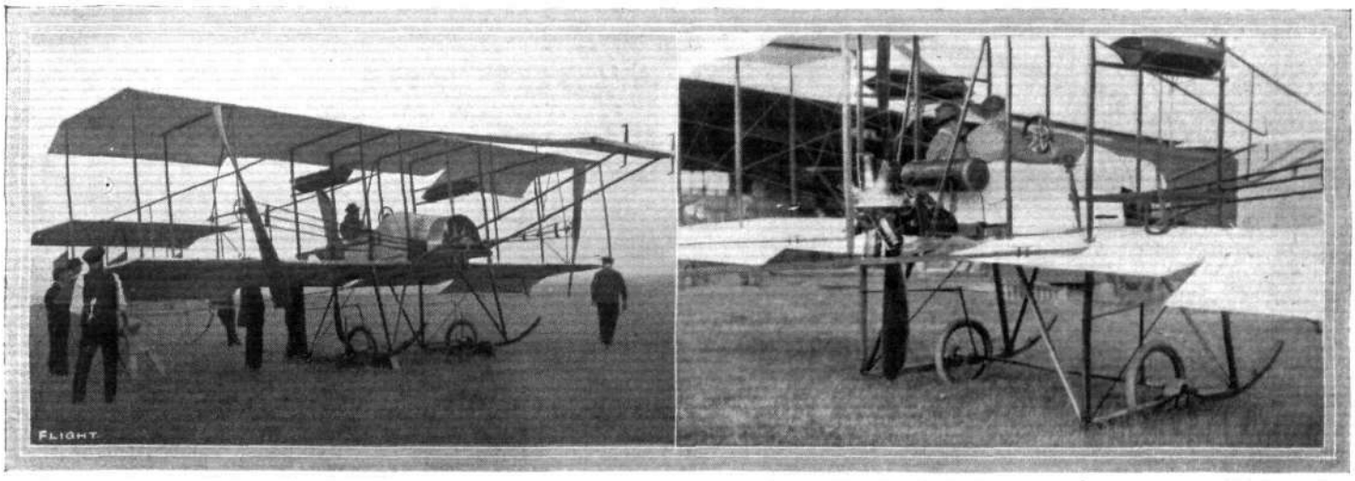
"Beaumont" as an Author.

LIEUT. CONNEAU, the winner of the second *Daily Mail* £10,000 prize, is now engaged upon a book dealing with his experiences, commencing with his cadet days. Naturally, his three successes in the Paris to Rome race, the European Circuit, and the Circuit of Britain, will come in for a good deal of attention, and the accounts of these should make very interesting reading. The book is to be published about next January.



The New Two-Engined Short Biplane, which has during the past week made such successful flights under the pilotage of Mr. Frank McClean at the Royal Aero Club's Eastchurch flying grounds. On the left Mr. Frank McClean is in the pilot's seat just ready to start, and on the right is a view from behind, showing Mr. McClean up with Lieut. Samson as passenger.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Royal Aero Club General Committee.

A MEETING of the General Committee of the Royal Aero Club was held at 166, Piccadilly, London, W., on Tuesday, September 26th, 1911. There were present: Mr. R. W. Wallace, K.C., in the Chair.

Royal Aero Club: Mr. Ernest C. Bucknall, Capt. Bertram Dickson, Prof. A. K. Huntington, Mr. F. K. McClean, Mr. Mervyn O'Gorman, Sir Charles D. Rose, Bart., M.P.

Bristol and West of England Aero Club: Mr. Albert E. Catford, Mr. J. R. Palin Evans.

Manchester Aero Club: Mr. Cedric Lee.

Yorkshire Aero Club: Mr. R. G. Macpherson.

Harold E. Perrin, *Secretary.*

Minutes of meeting of the General Committee held on October 4th, 1910, were confirmed.

Finance.—It was reported that an account had been opened with Messrs. Barclay and Co., Ltd., and the following Finance Committee was appointed for the current year:—

Royal Aero Club: Griffith Brewer, Ernest C. Bucknall, Prof. A. K. Huntington, C. F. Pollock, Sir Charles D. Rose, Bart., M.P. *Bristol and West of England Aero Club:* A. E. Catford. *Manchester Aero Club:* Cedric Lee. *Yorkshire Aero Club:* R. G. Macpherson. The accounts for payment were passed.

F.A.I. Conference.—The questions to be raised at the Conference in Rome on November 1st were fully discussed. Mr. R. W. Wallace, K.C., and Mr. M. O'Gorman were appointed delegates on behalf of the Royal Aero Club to attend the Conference, and it was left to the Associated Clubs to each send a delegate if they desired.

Committee Meeting.

A meeting of the Committee was held on Tuesday, the 26th inst., when there were present:—Mr. R. W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Capt. Bertram Dickson, Prof. A. K. Huntington, Mr. F. K. McClean, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Sir Charles D. Rose, Bart., M.P., Mr. A. Mortimer Singer, and Harold E. Perrin, Secretary.

New Members.—The following new Members were elected:—

Percy Charles Brocas-Parsons, Samuel Pepys Cockerell, Walter John Edlin.

Aviators' Certificates.—The following aviators' certificates were granted:—

139. Eric Clowes Pashley (Sommer biplane, Brooklands).
140. John Lewis Longstaffe (Farman, Brooklands).
141. Lieut. A. W. Stuart, R.A. (Bristol, Brooklands).

"Daily Mail" Circuit.

As previously announced, any balance of the entry fees in hand, after payment of the expenses, will be returned to the competitors. There are still a few accounts to be settled, but the Committee of the Royal Aero Club have decided to make an immediate return of 40 per cent. of the entry fee. Each competitor will therefore receive back £40, and a further distribution will be made as soon as the accounts are finally closed.

Late Hon. C. S. Rolls and Cecil S. Grace.

Several residents at Eastchurch have expressed the wish to place a stained glass window in the Church at Eastchurch, in memory of the late Hon. C. S. Rolls and Cecil Grace, both of whom made their first experiments in flying in the district.

Contributions previously acknowledged, £80 16*s.* 6*d*; Short Bros., £3 3*s.*; J. L. Travers, Junr., £1; Staff of Short Bros., 14*s.* 6*d.*; Lady Dunne, £1 1*s.*; total £86 14*s.*

The Committee appointed to deal with this matter visited Eastchurch on Monday last and selected a window overlooking the flying ground. The work will be entrusted to Mr. Karl Parsons.

Members wishing to contribute are requested to communicate with the Secretary of the Royal Aero Club. The list will be closed on October 2nd.

British Empire Michelin Cup £500.

Intending competitors are again reminded that the competition or this year closes on October 31st next.

The minimum distance to be covered in order to qualify for this prize is 250 miles.

This prize can be competed for on any recognised flying ground.

Entries must be sent to the Royal Aero Club, 166, Piccadilly, W., from whom full rules can be obtained.

British Empire Michelin Cup (No. 2).

Intending competitors are again reminded that the Competition for this year closes on October 15th.

The only flight so far recorded is that of Mr. S. F. Cody, on September 11th.

Entries have now been received from F. P. Raynham (Avro biplane) Ronald C. Kemp (Flanders monoplane), and C. L. Pashley (Humber monoplane).

COURSE.—Competitors may select their own circuit of 125 miles, but the start must be made from a flying ground approved by the Club, and the proposed circuit must be submitted to the Club before the flight is made. The rules stipulate that three clear days' notice must be given to the Secretary of the Royal Aero Club.

Observers for Aviators' Certificates.

The following members have been appointed observers for aviators' certificates at the flying grounds at Freshfield and Waterloo, Liverpool:—

Capt. Efford Bignell, C. Higginbotham, and L. Williamson.

HAROLD E. PERRIN,
166, Piccadilly. Secretary.

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PROGRESS OF FLIGHT ABOUT THE COUNTRY.

Birmingham Aero Club (62, ALBION STREET).

THE first of a series of monthly meetings, to be continued throughout the winter, will take place at the Colonnade, New Street, on Oct. 2nd. A technical paper will be read, followed by a discussion. Mr. Ernest Noble (King's Heath) will entertain the company afterwards with "Some Aeronautical Arguings." All ladies and gentlemen interested in aviation are cordially invited to attend. The chair will be taken at 8 p.m.

Dover Aero Club (11, MARINE PARADE).

SINCE the inception of this club, not so many months ago, great headway has been made in establishing it as one of the most powerful aeronautical clubs in the country, it including many men of considerable standing in the affairs of Great Britain, the membership at the present time totalling to 80. Amongst those who were instrumental in founding the club were Capt. W. P. Marley, Commander S. E. Forster, Capt. H. O. H. Moore, R.E., Capt. W. J. Todd, Capt. H. M. Ingle, and Mr. P. Harrington Edwards. The president of the club is the Marquis Camden, whilst the vice-presidents include Lord Kitchener, Vice-Admiral Sir John R. Jellicoe, and the Right Hon. Sir George Wyndham, M.P.

Excellent club flying grounds have been established on Whitfield Hill, about three miles out of Dover, and it is proposed that these should be enlarged and enclosed, thereby creating a very good permanent aerodrome.

The club proposes becoming associated with the Royal Aero Club, and owing to its unique position in relation to the Continent there is little doubt that the name of the Dover Aero Club will stand out in the history of the British aviation world. The original twenty-five founders of the body will probably have reason to look back upon their work in the future with considerable satisfaction. These founder members comprise Brig.-Gen. F. S. Inglefield, C.B., D.S.O., Commanding at Dover; Sir W. H. Crundall, Mayor and Chairman of the Harbour Commissioners; Commander S. E. Forster, R.N., the King's Harbour-Master at Dover; Sir M. Bradley; Mr. E. P. Barlow, of Kearsmey Court; Lieut.-Col. A. Dowell; Major H. Davies; Mr. A. C. Leney and Mr. Eric Crundall, County Councillors for Dover; Mr. Walter Emden, ex-Mayor; Mr. F. W. Duckham, of Messrs. Weetman Pearson and Co.; Capt. F. Fitzgerald; Mr. T. B. Harby, Clerk to the Justices; Mr. W. C. Hawke, Borough Engineer; Dr. Ian Howden, J.P.; Capt. H. M. Ingle; Rev. F. de W. Lushington, Headmaster of Dover College; Rev. G. H. Andrews, Chaplain to the Duke of York's Royal Military School; Mr. Eric Snepp, Mr. P. H. Edwards,

Mr. W. Saul, Mr. V. Elkington, Capt. W. H. Marley, Capt. H. O. Moore, and Capt. W. J. Todd. The address of Capt. Marley, who is the honorary secretary and treasurer, is 11, Marine Parade, Dover, to whom communications should be addressed in connection with the affairs of the club.

The inaugural meeting of the flying grounds was on Wednesday and Thursday of last week, but the elements proved anything but kind for such an event, the first day being very boisterous, and on the second the promised gymkhana exhibition flights having to be dispensed with owing to the absence of Mr. Barber, who was to have given some demonstrations on one of his Valkyrie machines. Mr. Valentine fortunately was secured for the occasion, but his racing Deperdussin monoplane was hardly suitable for anything beyond demonstrations of high-class speed flying and landing. Mr. Valentine made an excellent flight from the aerodrome on the Thursday, in spite of a very treacherous wind.

Manchester Aero Club (22, BOOTH STREET).

THE annual general meeting of the club will be held on Thursday, Oct. 19th, at 7.30 p.m., at the Midland Hotel, Manchester.

MODEL CLUBS.

Blackheath Aero Club (5, LIMESFORD ROAD, NUNHEAD, S.E.).

ON Sept. 23rd the club held their first "Rising from the Ground" competition, when several members competed. Mr. Clark's "A.B.C." No. 42 monoplane was first with a flight of 762 ft., Mr. L. Brough being second with 460 ft. As usual many excellent flights were made with models launched from the hand.

Future meetings will be held at the Kidbrooke Aerodrome and not on the heath. Will members therefore kindly meet to-day (Sept. 30th) near Lee Green tram terminus at 3.30 p.m., and come prepared with "duration" and "distance" models. Impromptu competitions will be arranged on the ground.

The committee would like a few more new members, and will be pleased to enrol any model constructors in this neighbourhood, but they must understand that "workers" only are wanted.

If anyone knows of a convenient ground within easy access of Lewisham, the committee would be glad if they will communicate with the hon. sec. at the above address.

Manchester Model AeC. (40, BIGNOR STREET, CHEETHAM).

A FLYING meeting was held on Saturday, Sept. 23rd, at the Trafford Park Aerodrome, and in spite of wind and rain there was a good attendance, a dozen or more excellent flights being made. Three of the members qualified for third class certificates. The best flight of the afternoon was made by Mr. Williamson, whose model flew for 690 ft. The above flights will count towards the prize, which will take the form of a passenger flight in an Avro biplane at the end of the season. Following the success of the meeting, numerous new members were enrolled, and it was decided to hold another meeting on Saturday, Sept. 30th, at 2.30 p.m., at the same place.

Prospective members are asked to kindly communicate with the secretary, Mr. Kenmure Kinna.

The season 1911–12 opens on Sept. 30th.

St. Mary's Model Aero Club, Portsmouth.

THE club held its first flying meeting on Saturday last, when a good many members attended. Owing to a high wind the flights were not all they might have been, many models showing signs of being really good flyers. A meeting will be held again to-day (Saturday) at 2.30 p.m., when members meet at the Vicarage. The next ordinary meeting is on Oct. 5th, at 8.30 p.m.

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THE AERONAUTICAL SOCIETY.

THE Aeronautical Society has reformed itself and thereby enters, we hope, upon a new lease of life. It needs all the support it can obtain just now, as our readers are aware, but a large accession to membership has been promised and those who have not yet made up their minds about joining are well advised to do so at once, for after next month they must pay two guineas a year for the same privileges as they can now obtain for one. Moreover, no subscription is required for the remainder of 1911, so the opportunity is the "chance of a lifetime" for all interested in flying. The Aeronautical Society, it must be remembered, is the oldest body of its kind in the world, having been founded forty-five years ago under the first presidency of the Duke of Argyll. By a signed agreement with the Royal Aero Club it is recognised as the official body dealing with the science of aeronautics in this country, so none need hold aloof in fear of fostering opposing interests; indeed, the proper action for all is to belong to both bodies. Every reader of FLIGHT is potentially eligible to join the Aeronautical Society and forthwith should send in his or her name, for ladies are equally welcome, to the secretary at 53, Victoria Street.

At the special meeting held on Monday evening, September 25th, the entire process of reform was effected amicably and without a moment's hesitancy or delay. After the repeal of the existing rules, a new set drawn up by the Committee of Enquiry and approved by the council were adopted *en bloc*. Under these rules a new council was elected on the spot, from nominations duly made in advance, which resulted in the election of the following members:—

A. E. Berriman	Mervyn O'Gorman	J. H. Ledeboer
Capt. A. D. Carden	Col H. E. Rawson	F. K. McClean
Bertram G. Cooper	Griffith Brewer	Alec Ogilvie
John Dunville	T. W. K. Clarke	F. Handley Page
Capt. E. M. Maitland	J. W. Dunne	Col. F. S. Stone
Lord Montagu of Beaulieu		

These serve until the next annual general meeting, to be held before March, 1912, when the composition of the governing body is to include eight representatives of the technical side and eight ordinary members, to be elected by postal ballot. The technical side is not yet created, but the whole detail of this business is provided for in the new rules, and henceforth the Aeronautical Society is in a position to confer the degrees of Fellowship and Associate Fellowship on those qualified by their technical status to receive them.

Needless to remark, the enterprise is fraught with considerable difficulty, but the rules have been carefully drawn and the strength of the new council is a good guarantee that their powers will be exercised only for the benefit of the Society and the profession. An important point for intending candidates to remember is that, in the first instance, they must join as members, and afterwards be elected as Associate Fellows before they are eligible to receive invitations to accept the full Fellowship.

Looking at the names of those who now have the responsibility of controlling the Society's affairs, no one can fail to notice that it is composed of new blood from A to Z. On such an occasion it would be distinctly unfair not to express a word of appreciation of the services of the old guard. There has been a very great deal of unselfish work on the Society's behalf that has never come to the surface, and is never likely to; nevertheless from men like Col. Fullerton and Col. Capper the Society has had an amount of real service that it will find hard to repay, and we feel sure that the fact that they did not accept nomination for the new council is no sign of a flagging interest in the Society's welfare. In the retiring President, too, Mr. E. P. Frost, the Aeronautical Society has had a direct link with the past from which it derived its dignity, and we may justly add its historic associations. No better tribute could be forthcoming to the services of such men as these than that all should come forward and help the Aeronautical Society to effectively maintain the position that is its own.

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SCHOOL AERO CLUB NOTES.

By ROBERT P. GRIMMER, General Secretary, British Federation of School Aero Clubs.

I HAVE to apologise to my readers for the temporary cessation of "School Aero Club Notes," but as I intimated in the last published instalment I have been away on holiday. My proximity to a large aerodrome on the East Coast fortunately gave me the opportunity of putting into practice that which I have long held in theory, viz., that model aeroplane flying is by no means the expensive sport that it is popularly believed to be. The alleged expense of the pastime has deterred many fellows from taking up model flying, in fact it has in the past been brought up nearly as much as the "only a pastime for the slacker" objection, with which I dealt only a short time ago. With the object of "showing up" this expense bogey I kept for the period of a fortnight a careful record of my mileage and repairs bill, and also incidentally of the daily wind velocity as registered by anemometer. The initial cost of my model, complete with geared winder and lubricant, amounted to 21s., and the machine itself had previously been in use for some time. During the 14 days this one machine covered a total *measured* distance of 84 miles, the daily average being six miles. On three days the

velocity of the wind amounted to more than 40 m.p.h., the daily average being nearly 20 m.p.h. Those of my readers who have had previous experience of model flying will realise that these high winds necessitated very severe winding of the motors in order to get the machine off at its relative flying speed. The total number of flights amounted to 350, the average flight being just under the quarter mile, and on the other hand the five best flights each exceeded half a mile. My expenses were :—(1) 2*s.* 6*d.* for a new rubber motor fitted during the second week ; and (2) 1*d.* for wire to replace a broken rubber hook. Thus I covered 84 miles with a repairs bill of 2*s.* 7*d.*, or about ⅓*d.* per mile, and this when winding each time to 800–1,000 turns. Needless to say, I employed assistants, some mounted on cycles, to recover the model and bring it back at a run to the starting point. Landing places were indicated by means of numbered pegs, and the distances measured at the close of each day's flying. I got the model off about once in every ten minutes, and the total number of hours occupied in flying was approximately 60. Thus the sport cost me roughly ½*d.* per hour, and although the feat was rather a strenuous one, I hope I have disproved for once and all the absurd fallacy that model aeroplane flying is an expensive pastime.

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THE NAVAL AIRSHIP DISASTER.

THE fears of the critics of the Naval Airship No. 1 have been realised, and the great rigid dirigible has not done even so well as her German prototypes, never having found her way into the upper atmosphere. After reposing in the safety of her shed for four months since she made her first brief appearance in the open, it was decided to bring the dirigible out early on Sunday morning last, it having been taken over on the previous evening by Capt. Murray Sueter on behalf of the Admiralty, after carrying out tests in the shed. Shortly after six o'clock, when there was a slight north-west breeze blowing, the men from H.M.S. "Hermione" were at their stations, and slowly the dirigible began to emerge tail first from the shed. Once outside the shed the dirigible began to cant over as an endeavour was made with the tug to turn the airship, and, at the same time, an ominous tearing sound was heard. This was followed by a series of sharp reports as the framework began to break at about the centre of the hull. The after part of the airship rose in an alarming fashion and threatened to float away, but fortunately the stays held, and with much difficulty the wrecked airship was got back into its shed. The officers and men who were in the gondolas at the time had a most exciting time, as they had to dive to get clear of the wreck, but fortunately the disaster was unattended by any loss of life or serious injury. The cause of the disaster has not been ascertained, but it would appear possible that one of the ballonettes had either burst or been pierced, so causing the gas to escape, and depriving the centre portion of the vessel of its proper support. We deal editorially elsewhere with the disaster.

I hope this term to see enormous progress made as regards the school aero club movement. The long autumn evenings are upon us, and cricket, boating and swimming are no longer possible. This is the time for model making and I hope that hundreds of our members and thousands of those who unfortunately are not members will indulge in this fascinating hobby. I am always pleased to advise any member of the Federation if a stamped and directed envelope is enclosed for reply. Also I must again call attention to the competitions announced in FLIGHT of August 26th and which close on the last day of October. I hope between now and Christmas to meet a great number of our members personally, as arrangements have already been made to deliver my illustrated lecture, "The Work of the School Aero Club," at quite a dozen centres in various parts of the country. During the last month we have had the pleasure of enrolling nearly fifty individual members in the ranks of the Federation and it is to be hoped that each one of these will form the nucleus of a future school aero club.

I need not ask all our members and friends to do their best to extend our work, for upon us depends the future not only of aviation but of the world empire of which we are proud to be subjects.

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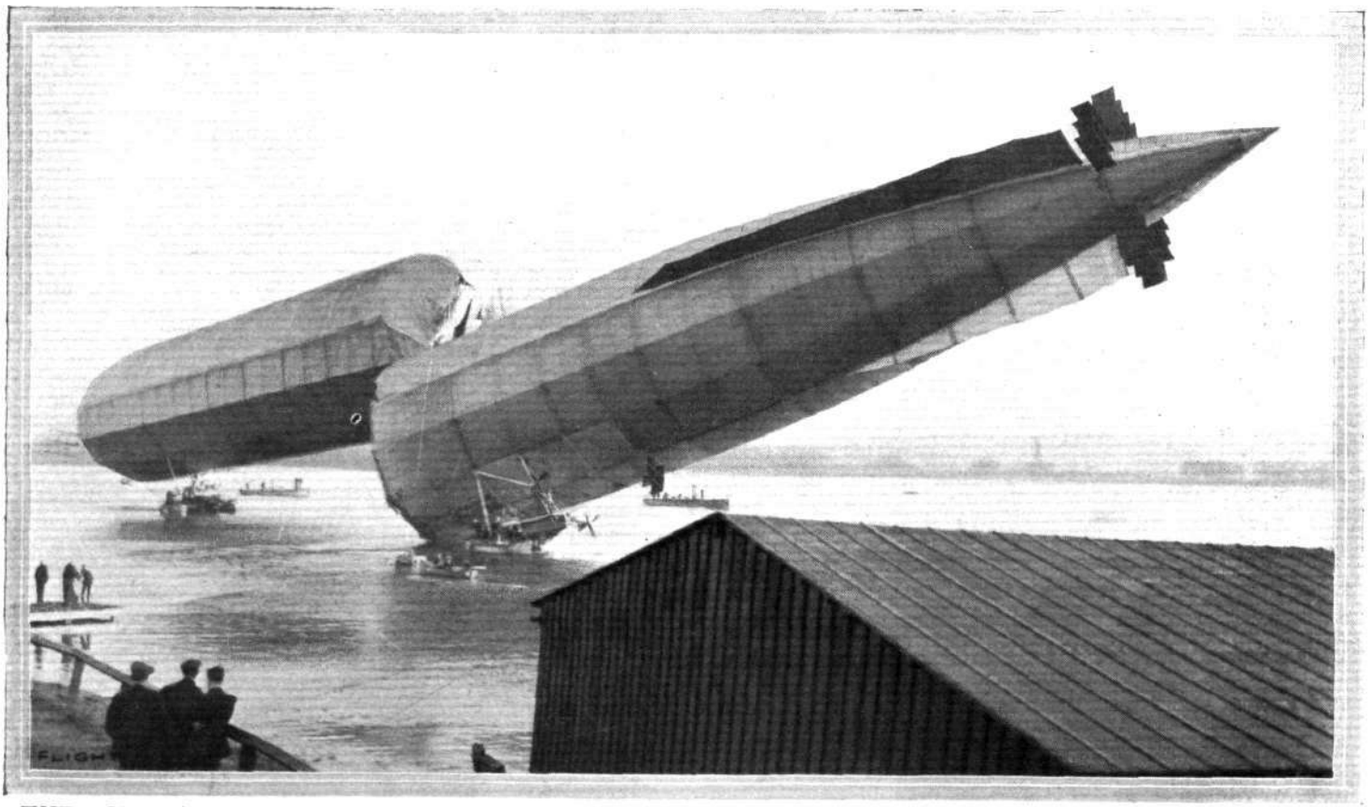
The "Adjutant Reau" Trials.

DURING a two-hour speed trial on Monday, the French military dirigible "Adjutant Reau" was timed to attain a speed of 55 kiloms. an hour. During her long cruise of 21 hrs. 20 mins. at the beginning of last week the airship covered a distance of 917·4 kiloms.

"Schwaben" Back at Baden-Baden.

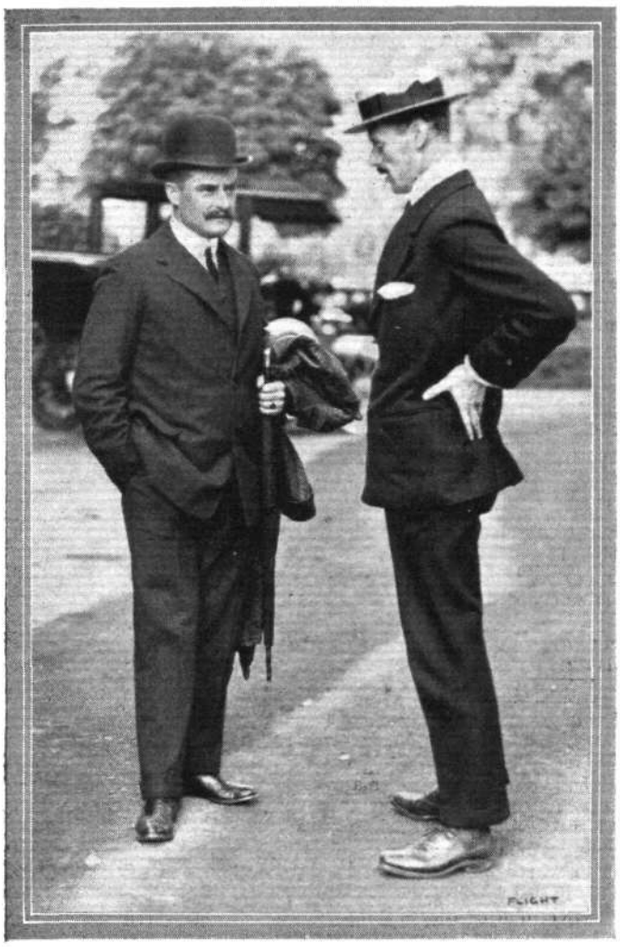
THE Zeppelin liner "Schwaben" arrived back at Baden-Baden from Dusseldorf on Saturday evening. She left Dusseldorf at a quarter to nine, and piloted by Dr. Eckener through wind and rain, reached Baden-Baden at half-past two, and was safely docked at Oos half an hour later. On the previous day a party of members of the Dusseldorf Chamber of Commerce were taken for a cruise, and on the 21st eight passengers made a trip to the west, being up for two hours and a quarter.



THE DISASTER TO THE BARROW NAVAL AIRSHIP.—General view of this leviathan aircraft after the breaking of her back. By degrees the two halves settled down on to the surface of the water.

FLIGHT

BRITISH NOTES OF THE WEEK.



Major Sir Alexander Bannerman, the Chief of the Aeronautical School at Farnborough, who was at Hendon in connection with the inquest on Lieut. Cammell. Talking with Sir Alexander is Capt. Loraine, who witnessed Cammell's fall.

The Work of the Bristol Company.

ELSEWHERE we give particulars of the new Bristol single-seater monoplane. As we go to press we understand this machine is being put through speed tests over a 5-kilom. heptagon-shaped course at Salisbury Plain, and the figures will probably be available for publication next week. A tandem double-seater on similar lines, also fitted with a 50-h.p. Gnome motor, is almost completed, and this machine will be similarly tested without delay. Yet a third machine of similar design is being constructed for pupils, and this is so modified as to be suitable for one of the new 28–35-h.p. 3-cyl. Anzani motors, to have a reduced flying speed of about 45–50 m.p.h., a wise precaution for beginners, who cannot be expected to master a monoplane at 65 m.p.h. until well trained on machines of a more moderate speed.

It is hoped that the tandem double-seater will attain a speed very nearly equal to that of the single-seater, and if such a result be achieved with a motor of 50 instead of 70 or 100-h.p., the Company will have produced the ideal machine according to present ideas for military or naval reconnaissance work, both on account of the wide range of view obtained and also because of the high speed to be attained with a motor which has always been considered as more reliable for long trips than those of the higher horse-powers.

Mr. B. C. Hucks' Flights on the Blackburn.

SOME splendid flights were accomplished last week by Mr. B. C. Hucks on his Blackburn monoplane at Cardiff, not the least interesting being those on Saturday, when, in conjunction with Mr. H. Grindell Matthews, some wireless telephone experiments were carried out with the aeroplane. Although he was flying at a speed of 85 m.p.h. at a height of 700 ft., Mr. Hucks said he could hear Mr. Matthews' voice distinctly. On the two previous days Mr. Hucks gave exhibition flights over the Ely racecourse. During his several flights on Thursday he covered about 50 miles, on one occasion passing over the Penarth Docks. On Friday three flights were made, the monoplane being seen over the Docks, Canton and Llandaff, while the greatest height attained was 2,000 ft. over Penarth Head.

Mr. Valentine at Dover and Burnham.

AFTER being stormbound at Shoreham by a gale on the previous day, Mr. James Valentine, on Thursday of last week, was able to make the journey from Shoreham to Dover on his Deperdussin monoplane. He flew in the direction of Deal before turning for the Dover Aero Club's Aerodrome on Whitfield Hill, where he safely landed, and aided by a westerly wind he was able to cover the distance of about 80 miles in 70 minutes. Incidentally, Mr. Valentine carried a letter from the Chief Constable of Brighton to the Chief Constable of Dover, and this was safely delivered within a few minutes of his arrival. During the day the gale returned and prevented any further flying until after five, when a very clever demonstration was given by Mr. Valentine at a height of 1,000 ft.

On the following day Mr. Valentine mounted his machine, and flew the fifty miles to Burnham-on-Crouch, where the British Motor Boat Club were holding their Regatta. On the way he called at Eastchurch. Soon after arriving at Burnham, by way of a change, he took his seat in "Babs II," one of Mr. Mawdsley Brooke's racing boats, and steered her during the last race of the day.

Folkestone–Boulogne Race Off.

IT has now been decided to proceed no further with the proposed Folkestone–Boulogne race, and the subscribers to the guarantee fund, which reached £564, have been released from their liabilities.

Mr. Tom Sopwith has had a huge success in America with his very capable flying. The above is an incident which followed immediately after his carrying two passengers for 65 mins. From left to right: H. W. Doughton, F. Russell (General Manager of the Wright Co.), Tom Sopwith, Coffyn (Wright flyer), and Welch (Wright Co.).

"Gamma" at Salisbury.

ON September 22nd last the Army airship "Gamma" made a successful flight from Farnborough to Salisbury Plain, *via* Basingstoke and Andover. Piloted by Capt. Broke-Smith and Capt. Maitland, with a crew of six, including Mr. Mervyn O'Gorman, a halt was made in front of the hangars on Lark Hill, Salisbury Plain, for lunch. Starting again at two o'clock, the return journey was made in 1½ hrs., the outward journey having taken 15 mins. longer. The total distance covered during the flight was 110 miles.

A Glider at Aberdeen.

SOME good sport has recently been obtained with a glider built at Aberdeen by Messrs. W. Anderson and Fred Singer. The span of the biplane is 24 ft., and it is fitted with an elevator in front and ailerons behind the main plane. The total area of the main planes and elevator is 288 sq. ft. Experiments were carried out in a field near the Bridge of Dee, and at first the machine declined to leave the ground, but was later induced to do so for a couple of hops between 15 ft. and 20 ft. As the result of the trials on Saturday week it was decided to rebuild the glider more upon Voisin lines and to carry out further experiments.

A Sale and Exchange Bureau.

IN order to meet a demand, the Weston Hurlin Co. have organised a sale and exchange bureau which promises to be considerably appreciated by those building or flying full-sized machines. They have a number of different aeroplanes and parts for sale, and inquiries should be addressed to them at the P.F. Building, 13, Milford Lane, Strand, W.C.

New Model Making List.

FROM Messrs. T. W. K. Clarke and Co., Crown Works, High Street, Kingston-on-Thames, we have received a copy of their latest list, giving full particulars of the large and varied stock of requisites for models and model makers which they hold.

AIR EDDIES.

ALTHOUGH still a prisoner in the National Hospital, Ridley Prentice, who is now managing the Aeronautical Syndicate, is rapidly recovering from the effects of a heavy landing he made a fortnight or so ago. That he saw poor Lieut. Cammell's fatal accident from his bedroom window overlooking the aerodrome must have done little to improve his condition, for he admits that, though he has led a seafaring life and become used to all manner of happenings, the sight completely knocked him over.

However, I'm really glad to see him so much better and to hear him say he hopes to be flying again in about three weeks time.

* * *

I hear that Grapperon, who was for a considerable time connected with Mr. Grahame-White as *directeur* of the latter's aviation school at Pau, and later as chief mechanic to him during his attempts on the London–Manchester prize, is forsaking aviation and returning to his old love, the racing motor cycle.

Before taking up aviation, Grapperon had several world's records to his credit, won for the most part on a motor cycle equipped with a 25-h.p. three-cylindered Anzani motor, *genre traversée de la Manche.*

* * *

Talking of motor cycles, reminds me that Gordon Bell, instructor at the Deperdussin school, does quite a lot of amateur racing round the track on his 7-9-h.p. twin Indian "Grey-bird." Last Saturday he was running in the 100 mile race at Brooklands, and doing laps at 72 miles an hour, when a broken valve put him *hors de combat.* He, incidentally, had designs on lowering the hour record for a twin, which, I believe, is at present standing in the neighbourhood of 65 miles.

* * *

I wonder what has become of the Indian aeroplane motor that the Hendee Manufacturing Co. brought out some time since. It was a rotary engine modelled on Gnome lines, and one would have thought with all their experience with air-cooled motors that something would have been heard of it ere now. The Triumph motor cycle firm ought to do well at producing an aeroplane motor of this type, but at present they have got their hands too full at keeping pace with the demand for their present goods to allow of any new undertaking.

* * *

Now that the aerial mail has run its course, we shall all be awaiting with considerable interest the publication of the balance sheet, in order to discover how many communications have been sent, and the amount that will be handed over to charity. *A propos* the latter, what charity is more deserving, or should meet with more general approval, than that of poor Hubert, who, with the interests of the scheme at heart, so pluckily attempted to maintain the service, even though he knew full well that an attempt under those conditions would entail considerable risk?

Who, amongst those who follow aviation, are not at one with Hamel in his action for ensuring compensation to the one who is at present lying in hospital with two broken legs as the result of his loyalty to the project?

* * *

Rumours are current at Hendon that Clement Greswell is going to give up flying. Let us hope that there is little truth in the report, for otherwise aviation in England would lose one of its cleverest and most consistent pilots of the junior school. Although not yet of age, he is equally master of both Farman and Blériot machines, and one could not wish to find a more steady flyer in a wind.

* * *

The Deperdussin school at Brooklands have added another machine to their fleet, a passenger-carrying model. The new machine is constructed on very pleasing lines, and, with its excellent record, should prove a great incentive to those who contemplate joining the school. As may be expected, Gordon Bell is very happy at its arrival.

* * *

I am sorry to see that one of the oldest institutions at Brooklands —to wit, the Hanriot School—will soon be closing its doors, at least under the present management. Whether or no it will undergo resurrection is a doubtful matter. Since its inception—and the school has by no means been lax about turning out pilots—all tuition has been carried out on the same trusty "bus," the one that Wagner flew at the Bournemouth meeting last year. Keith Davies was the first to win his certificate in England on the *libellule*, and among the many that have qualified since then on the same machine are Fisher, Gordon Bell, and Petre.

Rumour has it that Rippen has bought the machine, and although this report is supported by the observations of many of my accomplices on the track, Rippen himself stoutly denies the fact.

* * *

Mr. Richard T. Gates, the general manager of the Grahame-White Aviation Co., is taking up flying. Although he had only had three previous lessons on the E.N.V.-Farman at the Hendon School, he was out last Tuesday morning making straight flights across the ground in a none too pleasant side-wind.

* * *

Besides Mrs. Maurice Hewlett, of Brooklands, the only other lady pilot who is doing much real flying in England is Mrs. de Beauvoir Stocks, of the Grahame-White School. She has reached the circuit stage of her tuition, and really shows a remarkable grasp of the whole subject.

* * *

E. F. Driver, who has done so much good work on a Farman at Hendon, and who recently acted as one of the aerial postmen between that aerodrome and Windsor, is proposing to take up monoplaning at the Blériot School. He will shortly be returning to his native country, South Africa, where he intends giving exhibitions on both types of machine.

* * *

Champel, at Juvisy, was last Sunday carrying out experiments with a new method of maintaining lateral balance without the use of wing-warping or ailerons, the operation of which functions necessitates the use of the rudder to counteract their braking effect on the wing-tips. This new method of stabilising, the invention of the engineer, Bronislawski, seems to be one which does not infringe the Wright Brothers' patents, for it consists of fixed planes rotating around vertical axes situated at the ends of the main supporting surfaces. Further experiments were made on the following day by the same aviator, both with and without passengers, and it is reported that this new method of balancing has proved most satisfactory.

"OISEAU BLEU."

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Flying Ground, Eastchurch.

INTEREST at Eastchurch during the past week has centred chiefly on Mr. McClean's trial flights with the new Short twin-engine machine. On Thursday Mr. McClean took up several Naval officers as passengers, making a tour of the island at a height of 600 ft. McClean is particularly pleased with the climbing qualities of his new mount; it seems to have unlimited powers in this direction.

On Friday morning at 9.30 Valentine arrived from Dover on his Deperdussin, and after a short stay, during which he replenished his oil and petrol tanks, he again started up and headed for Burnham-on-Crouch, getting away in fine style.

Further flights were made with the twin-engine machine in the afternoon, lasting upwards of two hours, during which the aviator made a number of sharp right and left hand turns, and occasionally flew with both engines throttled down, reducing the speed of the machine considerably.

On Sunday the Hon. Maurice Egerton was out making a long cross-country tour by way of Sheerness, whence he was followed by Mr. McClean on the "twin," who, upon his return, made a faultless landing with both engines stopped.

At the conclusion of these flights, and just as it was growing dusk, Valentine again arrived on the Deperdussin, landing very neatly close to one of the sheds. He had flown from Burnham, a distance of 16 miles, in a side-wind, in 18 mins. 26 secs. After seeing his machine safely ensconced for the night in one of the sheds he returned to town by train.

Brighton-Shoreham Aerodrome.

THE gale on the 20th prevented any flying, but on Thursday week Mr. J. Valentine got away in fine style to Dover.

The Metzgar Leno machine is now in full working order and has been given some tests. On Friday and Saturday it showed a good turn of speed and the controls worked well. As it was only being tested it was not permitted to rise very far from the ground, but it made several long hops.

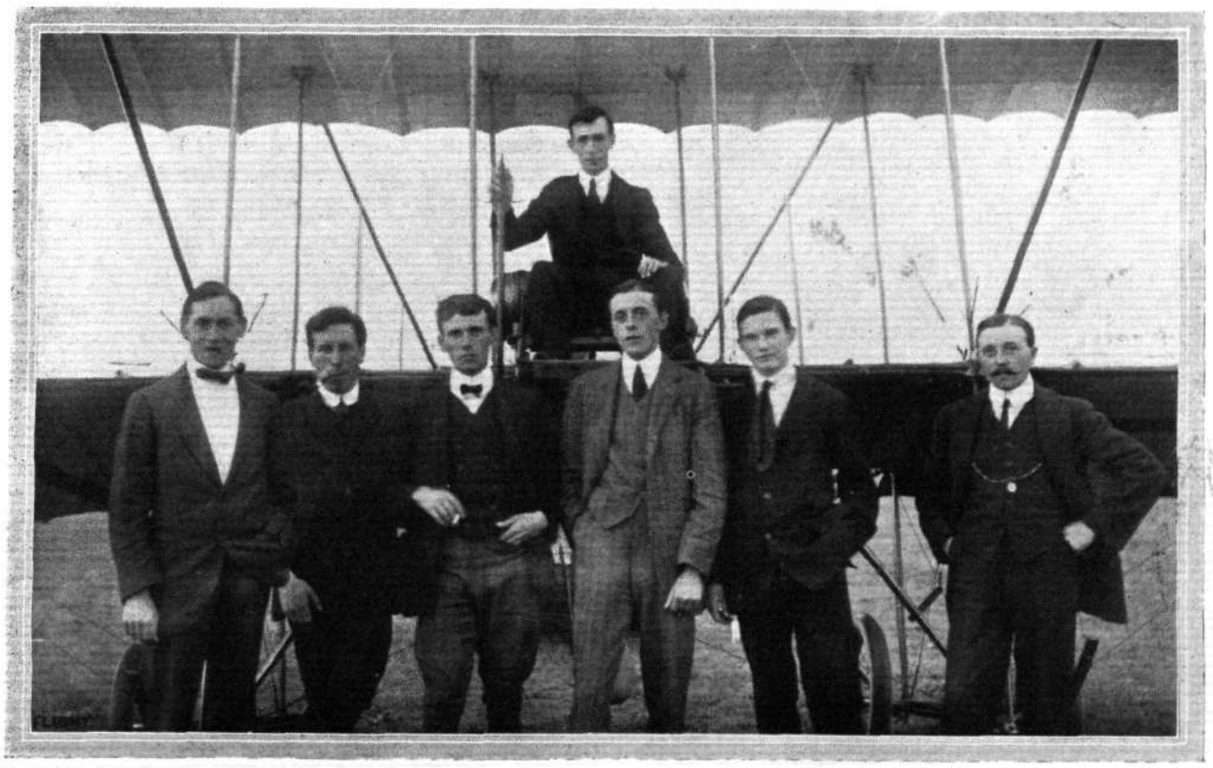
Bristol School (Bristol).

GORDON-ENGLAND was out in the field behind the British and Colonial Aeroplane Company's works at Filton on Friday last week putting a new passenger-carrying Bristol through her trials. He did two very fine circuits of about five minutes each. After a little adjustment he found the machine perfect. At 5.20 he started off for Salisbury, taking as passenger Mr. Harry Delacombe, who wished to witness the speed tests of the new Bristol monoplane. The wind was very gusty but the machine behaved remarkably well. The journey had to be abandoned, however, owing to a very thick mist, which made it impossible to see more than half a mile ahead.

Brooklands Aerodrome.

ON Wednesday last week wind and rain combined to stop all flying and make Brooklands look and feel like the last place on earth. Raynham, who it will be remembered flew to Hendon the day before in order to make a start in the morning, was prevented from doing so, much to his disgust. However, the day was put in very usefully in touching up the propeller and machine. His trip to Hendon was very trying. Soon after leaving Brooklands he ran into a dense bank of fog, but not to be daunted decided to push on in the hope of getting clear of it. He rose to 1,500 ft. to be safe from trees and chimneys and settled down to steer by compass. Thinking that the card was not floating, he bent over to pull the fixing-screw down, and at the same moment ran into an air-pocket. What followed was described by him as the most hair-raising incident of his flying career. The machine dived almost vertically, so that he was standing upright on the rudder-bar, and before he could get control again had described two complete circles. When he succeeded in straightening up, the barograph registered 500 ft. Talk about dives into space! After this little experience he proceeded along quietly, praying the while, until he saw a knob of land sticking up through the fog, so he landed, and found that he was near New Barnet. Some navvies held the tail while he started the engine, and shortly after he came down just outside Hendon Aerodrome, and finding he was just close to the fence skipped over, and thanked his stars and his engine that he had arrived safely.

Thursday morning dawned calm but misty, and everyone "got a move on." Maurice Ducrocq got away well, and made a cross-country flight over Weybridge. He never goes up now but he leaves the aerodrome. The Deperdussin pupils were out in force, Garne doing good straight flights on the *brevet* machine, and Chataway and Wilkins rolling and hopping on the pupils' "bus." Pizey had the Bristol out, and, after doing a few circuits, handed the machine over to Richey, who made some good figures of eight and landed



AT THE AVRO SCHOOL, BROOKLANDS.—In pilot's seat, Mr. P. Raynham. From left to right: Messrs. S. V. Sippe, C. W. Wheatley. L. Noel, McCullum More, D. G. Young, and A. E. Hunter.

well. Blondeau was also flying in his usual excellent style, and afterwards Mrs. Hewlett covered a few circuits, whilst Spencer was flying his Spencer-Farman, rising to a great height in one circuit. He could almost give a Gnome-Blériot points in ascending. A new and wonderful machine has lately appeared in his shed. At the first glance it looks like the framework for a huge chandelier, but no, hush ! it is a helicopter—whether it will helicop or not remains to be seen. Anyway there is plenty of strength. Rippen made some flights on the Hanriot, awaking the echoes and others. In the evening the Deperdussin school got busy and Wilkins did some rolling. He has a very firm seat, in fact so firm that he broke the back rest and nearly pushed the tail of the machine off. Garne got through some straight flights and Chataway went hopping. Signor Sabelli also joined the merry hoppers. Louis Noel, on the Avro-Farman, put in some good flying, and Spencer did several circuits. The "Big Bat" was brought out, but the engine refused to start, so Lieut. Harford had the Sommer out, and made some short hops and straight rolls. Unfortunately a wire came loose and damaged the propeller. Percival was flying the "Ouseley Bird" in great style. He has fitted extensions, and the difference he has made to the machine is marvellous. He can rise now very easily, and I don't think it has slowed the machine down at all. He has been making some good flights lately, and as soon as he has a new E.N.V. fitted, is going for the Michelin.

Friday was a bad day for the Deperdussin school. In trying to avoid running into a machine which was waltzing, Mr. Garne found it necessary to pancake his machine, breaking one of his skids, but probably saving a collision. Signor Sabelli made a bee-line for the fence, and succeeded in making a hit. He damaged the machine, the pupils' "'bus," pretty badly, breaking one wing and the propeller.

Spencer turned out and made some wide circuits well out of the grounds. Mrs. Hewlett was flying after breakfast for quite a long time, and Percival had his machine out and did a few circuits, despite a gusty wind. Fleming was flying on the Bristol, and Capt. Richey then started for his certificate. He passed the first half in very good style, flying at a height of about 300 ft., and then decided to adjourn to breakfast, as he had to get away early in the morning. In the evening Spencer got his machine out and did some circuits, taking as passenger his pupil, Mr. Frank.

The Bristol, piloted by Fleming and Pizey, made some good flights, Major Benwell, a new pupil, being taken up for an extensive passenger flight. The Deperdussin School took a rest, as both their machines were in dock.

On Saturday morning a good deal of flying was got in. Maurice Ducrocq made a good flight, again well out of the grounds, and Spencer and the Bristol pilot were teaching their pupils. In the evening the only flying was put up by Louis Noel, Spencer, Pizey and Fleming. There was rather a gusty breeze, and nowadays it gets dark so soon. Quite a good crowd turned up, as there was a motor cycle meeting on. The Pashleys brought their Humber monoplane out and ran the engine, but decided not to attempt a flight. Their engine has recently been done up at the Humber works, and is now pulling well.

Mr. Alfred Dukinfield Jones, who has just secured his Royal Aero Club Pilot Certificate at Mr. H. Melly's Liverpool Aviation School, Waterloo.

On Sunday nearly all the machines available made their appearance, flights being carried out by Pizey, Fleming, Spencer, Ducrocq, and Snowden-Smith.

Soon after 6 o'clock on Sunday evening, Raynham was observed approaching from Hendon. He found that the fabric on the planes was getting a little baggy, so decided to return to Brooklands to have them recovered. We have heard since that he is awaiting the arrival of a new machine from Manchester, fitted with a 60-h.p. Green, to compete for the Michelin Prize. This should be a very fast machine, and is expected to arrive in a day or so.

On Monday morning the new two-seater Deperdussin made its appearance. Lieut. Porte took it up for a few circuits, and finding things satisfactory, gave Gordon Bell a passenger flight. He then handed the machine over to Bell who put in a few circuits in excellent style. It is a fine machine with very good accommodation for the passenger. Both Porte and Bell are very pleased with the way in which it handles. It is to be used for passenger carrying, and also for taking up the pupils just as they are ready to make circuits. All the Deperdussin pupils are reaching an advanced state and should be fully fledged soon. Captain Richey finished the tests for his certificate satisfactorily, and immediately joined the Deperdussin school. He had his first practice on Tuesday morning, and gyrated in approved Deperdussin fashion. The Avro biplane was out, and made some short flights, piloted by Sydney V. Sippe ; the engine was not pulling very well, as too much oil had been put in the crank-case. Young was at work in the Avro-Farman, and the Deperdussin school were making busy with Lieut. Wilkins, R.N., Garne, Chataway, and Lieut. Chinnery, making straight flights. Major Benwell, of the Bristol school, was rolling and having passenger flights, and the Spencer pupil was also rolling.

In the evening Raynham took the Avro-Farman out for a trial trip and then a passenger. Noel and Young then flew some circuits, followed by Raynham with a short flight on the Avro biplane, the machine afterwards being handed over to S. V. Sippe, who flew a couple of circuits. Venkata Subba Setti then had some rolling practice, but operations were suspended owing to a burst tyre. Major Benwell took a passenger flight with Pizey and then Lawrence, an old Bristol pupil, made a fine flight at a height of about 800 feet. The Pashleys brought the Humber out and Cecil Pashley started off for a flight. However something going wrong, he landed on one wing, fortunately doing no damage. Spencer flew for some time. The Flanders monoplane is in dock getting ready for the Michelin. They hope to have it ready by Thursday. I hear that Martin and Handasyde are contemplating building a Weiss monoplane and one looks forward to see it very soon, as it is a very interesting machine and in the hands of such able constructors should do well.

Filey School (Blackburn Aeroplane Co.)

OWING to the gusty weather very little flying has been going on, but Mr. Oxley, who has been acting as instructor at the Blackburn School, has made one or two flights over the bay and Mr. Farran has made a few short runs.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—On Monday evening of last week Driver made test flights on the school Farman, in which an E.N.V. engine had been installed. The engine was found to be pulling well, so he gave up his seat to Mrs. Stocks, who practised rolling. Driver favours the E.N.V. motor for tuition purposes, as it can so easily be throttled down.

The following morning, Tuesday, Mrs. Stocks and Mr. Raphaite were out gaining experience, the former doing short hops, and the latter, an American pupil, rolling. During the evening they both resumed operations. Raphaite, tired of rolling *en ligne droite*, varied the monotony by performing figures of eight on the ground, in anticipation of that day when he will execute similar manœuvres in the ethereal blue.

Wednesday morning saw Mrs. Stocks out early doing hops on the E.N.V.-Farman, and later Mr. Gates, who is directing Grahame-White's interests during the latter's absence in America, took his first lesson, scurrying over the ground with the engine "all out." That Mrs. Stocks has serious designs on winning her ticket with the least possible delay is evident from the fact that she is always present at the aerodrome when flying is in progress. Her improvement to date has been most systematic. On Thursday morning she was out early, flying in straight lines on the school "'bus." Raphaite also rolled.

On the following day Mr. Gates took his second lesson, and succeeded in leaving the ground, making long hops. Raphaite was doing short hops, and Mrs. Stocks was flying quarter circuits. Taking advantage of the calm at the end of the day, Fowler, a new pupil of the Grahame-White School, commenced his tuition by rolling on the school machine. In addition, Mr. Gates and Mrs. Stocks indulged in further practice.

Saturday morning was devoted to more rolling by Raphaite and Fowler. Little flying was seen at the aerodrome on Sunday, for the school was closed down for the day. M. Salmet made several extended flights on his Blériot-Gnome during the afternoon in a considerable wind, mostly at an altitude of about 2,000 ft. Salmet's flying is noticeable from the fact that he rarely ever makes a left-hand turn, always preferring to take the right. His machine is the one which Weir used in Scotland a month or two ago. The only other event of interest was Raynham's departure for Brooklands on the Avro biplane. Raynham originally intended to fly over the Michelin circuit, starting from Hendon, but he had to return to headquarters in order to have his planes attended to. The fabric had sagged so much as to seriously interfere with his machine's inherent efficiency. After three circuits he descended to make adjustments to his engine. At his second attempt he rose easily to 300 ft in the course of two circuits and then struck out across country to Brooklands, disappearing from sight at an altitude of over 1,000 ft.

Early on Monday morning Mrs. Stocks brought out the E.N.V. Farman and flew many times from one end of the aerodrome to the other. Mr. Gates was also doing straight flights, and Fowler was accustoming himself to the controls without leaving the ground. Soon after 10 o'clock Hamel rose on his Blériot and set off for Windsor carrying two bags of mails. Owing to the breaking of one of his Gnome inlet valve counterweights he was forced to descend near Langley, from which place he took the mails to Windsor, a distance of about four miles, by car. He was delayed at Langley by the wind until after 6 o'clock.

No further flying occurred that day at the Grahame-White School, but on the next morning Mrs. Stocks signified the termination of the straight flight stage of her tuition by covering two circuits of the aerodrome. At the same time Fowler and Raphaite indulged in more practice, while Gates continued making straight flights.

Salisbury Plain.

Air Battalion.—Owing to the officers being away for the funeral of Lieut. Cammell, who will be greatly missed at Salisbury, there is very little to report. On Friday, the "Gamma" sailed over from Aldershot, and Capt. Maitland brought her down practically at the same spot at which he met with his accident thirteen months ago. The airship stayed for about two hours, returning to Aldershot after the officers had taken lunch. On Monday all the Air Battalion, with the exception of Capt. Fulton and Lieut Conner, left for Aldershot, and will not be back until November 15th. Capt. Fulton and Lieut. Conner are staying on for a few days, and on Tuesday they were out doing some scouting practice.

Bristol School.—Last week was very windy, but Pixton, after trying No. 9 machine, took Capt. Steele Hutcheson for a passenger flight on No. 12 for 15 mins.; Busteed also taking Lieut. Cross and Lieut. Hooper for flights of 15 mins. each. Jullerot, after having No. 9 engine adjusted, gave her a spin, Gilmour afterwards trying the same machine, she behaving very satisfactorily.

Next day Gilmour ascended and found things beautifully calm, in fact the conditions were ideal. He then took Lieut. Hooper and Capt. Steele Hutcheson for flights of 10 mins. each. Pixton after a solo on No. 9 pronounced it in perfect order. Busteed carried Lieut. Cross for a flight, reaching a height of 1,000 ft. Lieut. Cross then made his first solo perfectly, ascending to a height of 80 ft., and remaining up for 8 mins. Mr. Smith Barry followed with a solo of 10 mins. at a height of 200 ft., while Mr. Lee also went up for a flight, coming down after 10 mins. from a height of 200 ft., and making a much better landing than he had previously done.

It was blowing big guns all day Wednesday, raining in torrents, nothing being able to be done out of doors, but instruction was very active in the sheds.

Hotchkiss made a solo on Thursday morning to ascertain what the conditions were like, and came down after fifteen minutes reporting things to be perfect. Busteed then carried Lieut. Strover for a flight of 10 mins., Pixton made a trial on No. 12, Mr. Smith Barry two flights of 10 and 15 mins., Lieut. Cross two 8-minute flights, Lieut. Strover one flight of 8 mins., as did also Capt. Steele Hutcheson and Lieut. Newall. In the evening Gilmour started off the work by taking up a lady passenger, and afterwards Mr. Smith Barry. Busteed then ascended with Lieut. Hooper. Lieut. Cross made one flight of 10 mins., Lieut. Newail, Mr. Smith Barry, and Lieut. Strover afterwards each making solos of 8 minutes' duration.

On Friday Busteed made a solo to test the weather, afterwards giving two passenger flights to Lieut. Hooper. Two solos each were then performed by Lieut. Newall, Capt. Steele Hutcheson, Lieuts. Cross and Strover, who are all developing into very good flyers.

Saturday was too windy for solo flying by pupils and for the expected tests of the monoplane, whilst the day finished up with pouring rain.

Jullerot made trials on Sunday, Busteed following with Balder as companion, after which nearly all the pupils made solos, Pixton flying the machine back to the sheds.

On Monday Jullerot was up early to ascertain the conditions, and finding things very favourable, Busteed started off the morning's work by taking Lieut. Hooper for a flight. Lieuts. Cross, Newall and Mr. Lee followed with solos, and each completed a circuit in fine style. Afterwards Lieut. Balder made a circuit. The morning's work was brought to a close by Mr. Smith Barry, Capt. Steele Hutcheson and Lieut. Strover making solo flights. All the pupils at the school are now, with few exceptions, waiting opportunities to pass their official tests.

NEW RACING TYPE BLÉRIOT MONOPLANE (No. XXVII).—Many details in the design of Blériot's two-seater model are incorporated in the new single-seater racer with which Blériot is now experimenting over the sands at Hardelot. The main body is constructed in the form of a double-ended wedge, at the front of which protrudes the 50-h.p. Gnome engine, mounted in position without the employment of a bearing between the propeller and the engine. The stabiliser, as in the two-seater model, is constructed integrally with the fuselage and at the rear edge is hinged the elevator. The overall length of the machine is 7 metres, and the wings, which have a supporting surface of 12 sq. metres, span 8·90 metres from tip to tip. This new model, which weighs 430 kilogs., has been timed to attain a speed of 130 kiloms. an hour.

FOREIGN AVIATION NEWS.

Johannisthal Flying Week.

THE Johannisthal flying week opened under very favourable conditions on Sunday last, when as many as a dozen machines were seen in the air at one time. The best flight of the day was made by Rietscker, who was up for 2 hrs. 10 mins., although Fraulein Beese ran him very close, being only 1 min. less, while the third best flight was Suvalack, with 1 hr. 56 mins. The altitudes reached were not very great, the highest recorded being 100 metres by Grublich. On Monday 17 aeroplanes were out at different times during the day, while the lighter-than-air craft were represented by "Parseval VI," which floated over the aerodrome. The best performances were Casper 2 hrs. 20 mins., Rietscker 2 hrs. 18 mins., Jahnow 2 hrs. 11 mins., Miss Beese 2 hrs. 4 mins.; while, as regards height, Suverlack got up to 1,400 metres. One of the exciting incidents which occurred during the day was caused through Schulze running his mount into one of the barriers, damaging the machine, but fortunately escaping injury himself.

New Passenger Height Record.

AFTER spending a couple of days at Issy practising for the event, Mahieu, on the 22nd inst., succeeded in beating the passenger height record, carrying his friend, M. Fay, to a height of 2,460 metres in 55 mins. He then descended to about 1,500 metres, and passed over Choisy and the environs of Paris before landing again at Issy. He was flying one of the new Voisin military machines. The old record was Montalent's 2,250 metres made at Brooklands.

Mahieu Flying Home.

AFTER improving on the passenger height record, Mahieu decided to fly back on his Voisin machine to his chateau between Lille and Ypès. He left Issy on Saturday afternoon, and landed at Douai owing to the darkness at half past six, his flight having taken an hour and a quarter.

The New Antoinette Tested.

ON Sunday afternoon the new Antoinette machine illustrated in these pages the other day, and built for the French Army Competition, was put through some tests at Mourmelon, and, as far as can be gathered, gave every satisfaction.

At the Maurice Farman School.

AMONG the distinguished visitors at the Maurice Farman School on Monday at Buc, were the Princess Murat and her two sons, and they were given *le Baptême de l'Air* by Mr Farman, who also gave flights to a number of other visitors, including Mdlle. Andrée Lais.

Legagneux Among the Mountains.

ARRANGEMENTS had been made by Legagneux to fly at Lugano on Saturday, but the weather was against him. On Sunday afternoon, however, he was up for two hours on his Blériot monoplane, and, ascending to about 1,300 metres, he flew over the lake and town, and round the Monte San Salvatore.

Pourpe at Roubaix.

DURING a visit to Roubaix on the 22nd inst., Marc Pourpe made several flights, and during one, which lasted 40 minutes, he flew over the Exhibition at a height of 500 metres, passed over the town and also over Tourcoing and the environs.

At the R.E.P. Headquarters.

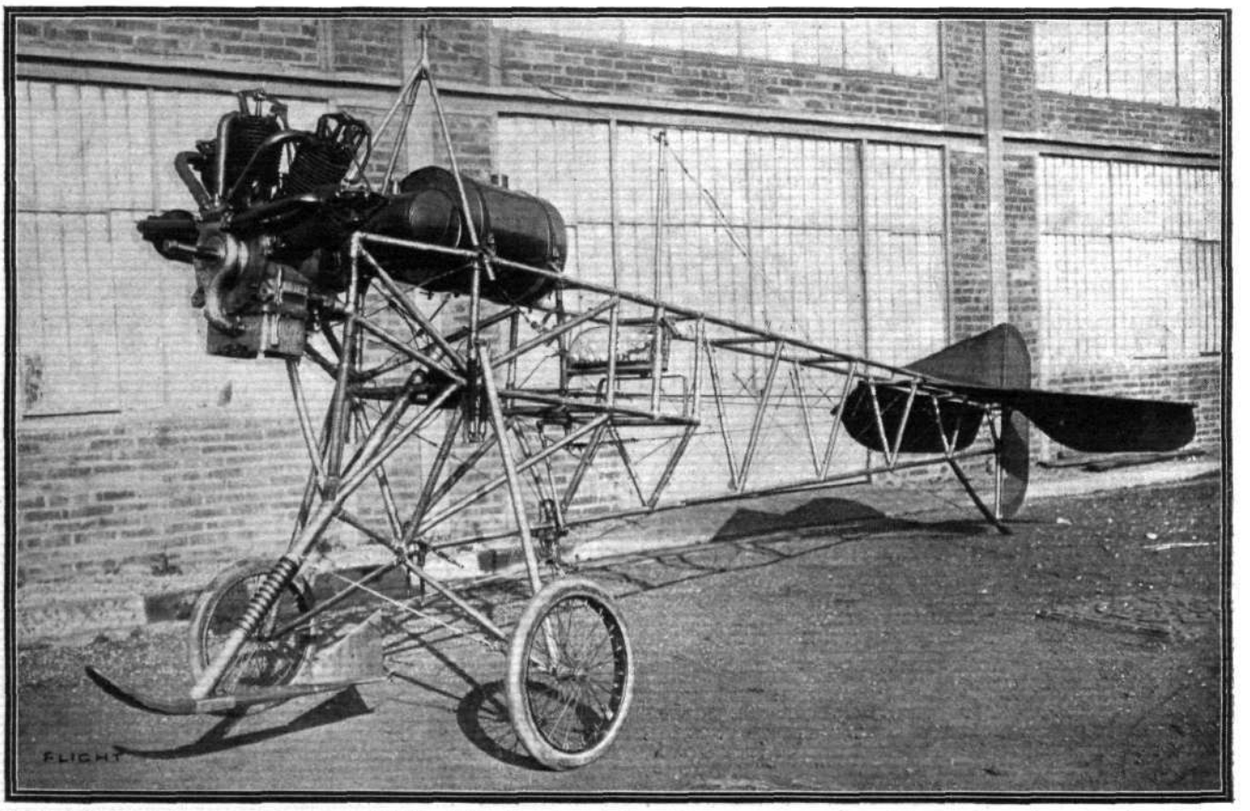
ON Saturday last Bobba was trying a new two-seated machine, and took up a number of passengers on it, including M. Esnault-Pelterie, and M. Wild, engineer of the R.E.P. works. Last week Captain Wood paid a visit to the works and was trying some of the new machines.

A Lady Flyer at Issy.

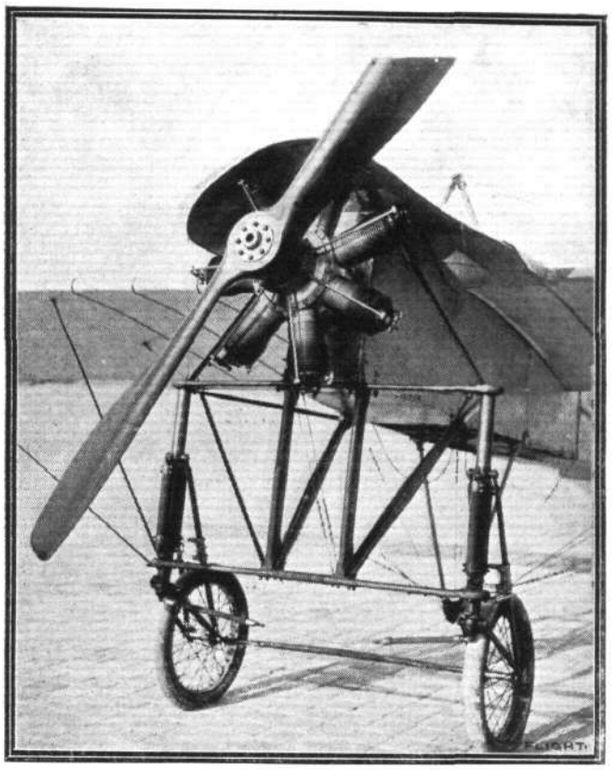
SINCE her arrival at Issy, Mme. Driancourt has been seen in the air almost every day on her Caudron biplane, which, by the way, is fitted with a six-cylinder Anzani motor. On Saturday last she won a prize, offered by the Syndicat des Aviateurs, by flying over the Café Auroux.

A New Clement-Bayard Monoplane.

THE Clement-Bayard works have now turned out a new type of monoplane, and in the hands of Dinard it has been giving very



THE LATEST R.E.P. MONOPLANE.—The fuselage before the mounting of its planes, &c., showing the method of construction adopted for the framework, landing chassis, fixing of the engine, &c.



Front view of the new Blériot racer (No. XXVII), showing the reduced landing carriage, the overhung mounting of the engine and propeller, and the peculiarly shaped cowl which prevents the lubricating oil from reaching the pilot. Blériot, such a strong believer in mounting the engine by bearings on both sides, has, it will be noted, at last abandoned that method in favour of one which renders the motor considerably more accessible. It will be observed that a very slight dihedral angle is employed on this new model, and that the main body has a decided taper towards the front to minimise head resistance.

good results at Chateaufort. On Saturday, at its first trial, it flew for 20 mins. over Buc, St. Cyr, and Guiancourt.

New Sommer Machines.

AMONG the new machines which have been tested recently at the Sommer headquarters are a new biplane and a monoplane intended for military use. The former, with Crombez at the helm, is said to have attained a speed of 100 k.p.h., while on the latter Bathiat was flying for an hour on Saturday. Testing another machine which he has built in view of the French Army competition, M. Sommer, on Monday, rose 500 metres in 11 mins., carrying a load of 520 kilogs. On the same day Crombez, on the aerobus, carried 7 passengers to a height of 800 metres.

Quick Work on a Nieuport.

HAVING got back to Mourmelon after the manœuvres, Lieut. Fequant, on the 22nd inst., mounted his Nieuport monoplane and in three hours had made the three tests necessary to qualify for his superior military *brevet*.

Leblanc Trying the New Blériot.

ON Saturday last at Hardelot, Leblanc was trying a new Blériot racer, No. 27, and unofficially was timed to attain a speed of 130 k.p.h. (81 m.p.h.). which promises well for this machine when it appears in public competitions. We give elsewhere photographs of this new machine.

The Quentin Bauchart Prize.

ON Saturday last Renaux, on his Farman biplane, was adding quite a useful little addition to his total for this prize by flying over a course from Vincennes to Etampes and Orleans. On the previous Tuesday, Gibert, over the Michelin course from Lhumery to Gidy, added 300 kiloms., and on the following day 315 kiloms., making his total score over 1,800 kiloms.

To Commemorate Nieuport.

THE Municipal Council of Suresnes have a practical way of commemorating notable citizens of that part who have passed away. Last year they named a street after the late Capt. Ferber, and they have now decided that the Rue de Seine, in which the Nieuport works are situated, shall henceforth be known as the Rue de Nieuport.

The Casablanca-Fez Flight.

BREGI did not actually complete his flight to Fez quite so quickly as was reported in our last issue, the mistake being due to a telegraphic error. He was detained at Rabat for five days mainly owing to the sand storms, and it was not till Tuesday morning last week that he was able to get on from Rabat to Mequinez, covering the 81 miles in 1 hr. 35 mins. Delay was experienced there owing to the scarcity of petrol, but on Thursday morning the journey was resumed and Fez reached safely, the aviator and his companion being given a hearty welcome by the European colony at the Moorish capital.

At the Dutch Army Manœuvres.

CONSIDERABLE assistance has been rendered to the Dutch military officers during the manœuvres by Jacques Labouchere on one of the new Zodiac military biplanes. On the 22nd inst., with an observing officer on board, he made a reconnaissance of 100 kiloms. in 1 hour 7 mins., while in the afternoon he carried two other officers for lengthy flights.

The Italian Circuit.

THE last stage of this competition, from Rimini to Bologna, was started on the 20th inst., when five Italian officers were timed away as well as three civilians. The officers were not competing for prizes, but in the general classification three of them secured the leading places, Capt. Piazza being first, Lieut. Gavotte second, Capt. Moizo third. The fourth place was taken by Frey on his Morane monoplane, and he was the winner of the competition. Lieut. Rossi was fifth, and Gaubert, who piloted an Astra biplane, sixth, he taking the second prize. Lieut. Roberti was placed seventh, Deroy, the other competitor, being disqualified, as he landed at Rimini after the control had been closed.

The New World's Altitude with Passenger Record.—Mahieu, the pilot who last week put up a new passenger record for height, on a Voisin biplane, with 2,460 metres. Starting from Issy at 3 o'clock, he returned to *terra firma* at about 6.30. With him is M. Fay, the passenger who accompanied him.

John Wilmer sends us greeting from Plattsburg, N.Y., in the above photograph, as "From the man who fell from the balloon last October 2nd. I fly at Ottawa County State Fair, week September 11th."

An Italian Passenger Record.

AT the Mirafiori Aerodrome at Turin on the 21st, Rossi beat the Italian passenger record by covering 162 kiloms. in 2h. 2m. 29s.

An Italian Aerial Post.

ON the 20th inst. the Italian flyer, Dal Mistro, carried a bag of mails on his Deperdussin monoplane from Bologna to Venice, the 163 kilometres which separate these two points being covered in 1 hr. 28 mins.

The New York Meeting.

GRAHAME-WHITE and Sopwith attracted great crowds to the Nassau Boulevard Aerodrome on Sunday last, for the opening of the New York meeting. The former won the cross-country race, with Sopwith second, and the latter was also second in the passenger-carrying competition, while together they won the ten-mile relay race. Miss Matilda Moisart secured the ladies' height contest, getting up to 1,200 ft.

Two More American Fatalities.

YET another fatal accident has occurred in America through an aviator being goaded by the jeers of the crowd into flying against his own judgment. At Troy, Ohio, Mr. Frank Miller experienced trouble with the engine of his machine and decided not to fly, but on this decision being communicated to the waiting crowd, they began to demonstrate their anger, and in order to appease them the aviator decided to make a trial. He was flying at a good height when, to the horror of the officials, flames were seen to break out round the motor. The machine fell to the ground, and on the officials reaching the wreck the aviator was found burnt to death. The second accident occurred at Mansfield, Pa., where, while flying at a height of 4,000 ft., a machine piloted by Castellane suddenly capsized and fell to the ground, the aviator being killed in the smash.

The New Transatlantic Dirigible.

THE new dirigible with which Mr. Vaniman intends to again try and cross the Atlantic has now been finished and taken to Atlantic City, where active preparations are being made in view of the proposed start on October 22nd. The airship has been named "Akron."

THE NOBEL ENGINE.

THE petrol engine illustrated and described herewith embodies special features on which the inventor invites criticism prior to putting the actual construction in hand.

One common or main poppet-valve, as shown, is provided in the cylinder-head. This valve acts both as an ingress for the charge and an egress for the exhaust gases.

Upon the induction-stroke of the piston the fulcrum-lever, A, opens simultaneously both the induction-valve, B, and the common valve, while at the same time a piston-valve, C, being in one with the induction-valve, travels downward, and thus closes the exhaust apertures situated around the cylinder-head, as shown. Upon the exhausting stroke the fulcrum-lever, D, opens the common valve only, the induction-valve being meanwhile on its seat, in consequence of which the exhaust apertures are open.

It will be seen that by arranging the valve-levers to "clutch," as shown by plan of levers, no alteration to the cam motion is necessary, the standard practice of 2-to-1 gearing being retained.

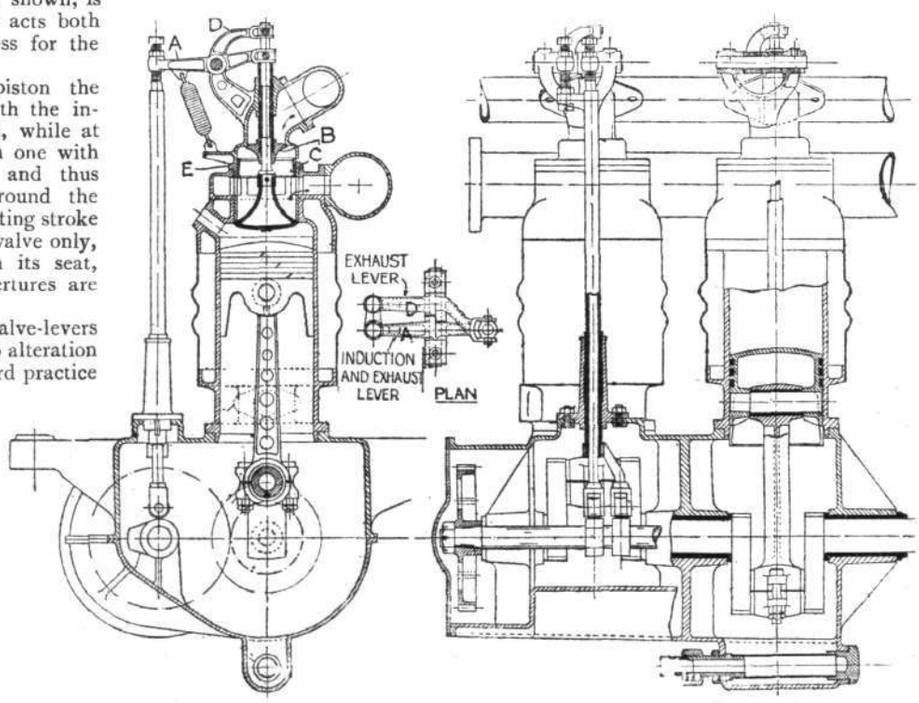
The valve-box, E, is made a grinding fit in the cylinder-head, and can be readily drawn out *en bloc* with the valves.

The opening of the induction-valve being slightly in advance of the complete closing of the exhaust ports, any remaining gases in the valve-box are forced out by the incoming charge.

The design of the cylinder having no valve-box abutments below the cylinder-head, readily allows of a circular copper water-jacket.

The design simplifies the induction- and exhaust-pipes.

It will be seen that the piston-valve, C, acts as a very substantial guide to the common valve, thus minimising the chances of the latter tilting on its seat.



CORRESPONDENCE.

*** *The name and address of the writer (not necessarily for publication)* MUST *in all cases accompany letters intended for insertion, or containing queries.*

Correspondents communicating with regard to letters which they have read in FLIGHT, would much facilitate ready reference by quoting the number of each such letter.

Aerial Gunnery.

[1369] R.A., in letter 1355, makes telegraphy to appear a delightfully simple operation. During actual warfare, a telegraphist, after sending off a large number of totally unintelligible messages, might be pardoned if he left out a letter, a syllable, or even a word. There is an excellent description of the telegraphist's office under Service conditions in "The Green Curve," by "Ole Luk-Oie." I should also like to mention a footnote to Section 17 of F. S. R., Part I, a work to which I had occasion before to draw R.A.'s attention :—*The term "signal" includes telegraphs. . . .* and to point out that it is possible to "tap" even wireless messages.

R.A. seems to think it the easiest thing in the world to alter the speed of one's aeroplane to suit that of any dirigible that happens to be underneath one. As easy, in fact, as it is to solve a triangle when in flight.

It is not the number of shots fired that will bring down an aeroplane, but the number of hits, and the bull is small. Hitting a man, an engine, or propeller at 2,000 ft. with ball is very different from hitting snipe at 110 ft. with shot.

I confess to be still not quite convinced as to the utility of the "rough rules" R.A. mentions, and would be extremely obliged if he would give me more particulars about them. Perhaps I shall find them in the article he mentions. In any case, many thanks to him for recommending it to me.

O. D. ATKINSON.

Classification of Aeroplanes.

[1370] In looking over some back numbers of FLIGHT I came across Mr. E. W. Twining's letter on the "Classification of Aeroplanes," No. 880, of November 12th, 1910.

Since his letter was published I have not heard of this method of tabulating types of machines being used. Furthermore, Sir, in referring to your editorial note I see that you study the interests of your new readers, and rightly so. But I think the time has come that any person can understand the classification of aeroplanes, be he a student of aeronautics or otherwise.

I call attention to this because I am sure it would save a great deal of space and unnecessary repetition of describing types of aeroplanes.

Salisbury. D. ALLON PITT.

The Aerial Post.

[1371] In your editorial comment of last Saturday's FLIGHT is a short article on what the *Manchester Guardian* thinks about the aerial post. It calls it "an amusing enough game for the silly season," and I quite agree with it too.

I am a great believer in aviation, I have studied it from its earliest stages, and have seen many different types of machines in flight, and I think, if I may be allowed to express the following opinion, they may stand as some defence for the cause of aviation, and also prevent the aeroplane from being used for more or less "farcical" purposes.

Your paper seems to have been in favour of this "farce," for in FLIGHT of September 16th, in the Editorial comment, you say: "So far the venture has proved successful, in spite of the unfortunate accident to Hubert," &c. Well, let every person who received letters or post-cards which have been taken for a twenty minutes' ride in an aeroplane (or supposed to have been, as there is no proof that they ever went to Hendon) think that these epistles have played a part in practically crippling an aviator for life.

Then in the same article you go on to say: "Thousands of people have received letters which have been carried through the air (?) (the query is mine) and have been duly impressed by the wonder of it all."

Wonder of what? There is nothing wonderful in the fact that an aeroplane can fly twenty miles with a few pounds of letters strapped on to the machine.

Then the lay Press (when reporting on aviation often gets hold of false reports which are published and are well remembered by the non-aviation public), have no doubt done some damage to the science through this postal business. They boomed it before it was started, after, and also Hubert's accident. I think if they would fill their columns with good accounts of cross-country flights, &c., instead of accounts of accidents to aviators, they would create a better impression on the outside public.

Naturally people who do not take any interest in flying, and never will so long as they read these accounts of accidents, become more and more "pigheaded."

I know of some people who come under this category that gloated over the stoppage of this letter airing business and said if aviators were foolish enough to risk their necks for playing at aerial postmen they need expect no sympathy from the outside public.

I am very pleased indeed that the Postmaster-General has stopped it. I think it a pity that Messrs. Hamel, Greswell, Hubert and Driver were dragged into this business, as they might have been making better flights elsewhere.

The next thing I should like to see as regards this business is the balance sheet, which if circumstances permit I hope you will publish.

Sorry to trouble you with this long letter, which I hope you will publish next week.

Wishing your paper further successes. I may say I have taken it almost from the first.

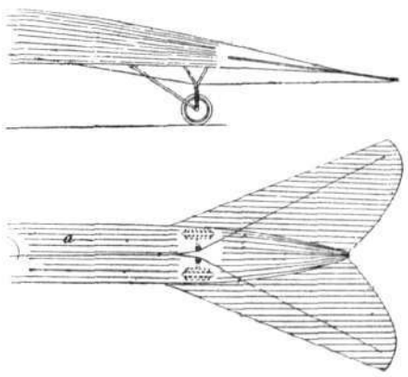
Pool, near Leeds. "REMOUS."

[There are two points in our correspondent's letter to which we would refer. He presumes to doubt whether the letters consigned through the Aerial Post were carried by aeroplane at all. His remark under this head is certainly uncalled for and in bad taste. To criticise the promoters of the enterprise for their conception is one thing, but to throw doubt on the elementary *bona fides* of the service is quite another, and we are confident that on reflection "Remous" will see it in this light.

He asks what there is wonderful in the receipt of a letter which has been carried for twenty miles through the air. Is there nothing wonderful in it when we remember that three years ago the longest flight was measured in yards? Again, is there nothing in the point that the personal appeal made to the recipient of the air-carried letter to consider that the aeroplane is so much an accomplished fact that it can be applied to the purposes of our everyday life worth nothing to the science? We should be sorry to think so.—ED.]

Twisting Tail for Steering.—Letter 1331.

[1372] In reply to Mr. Richards' letter in your valuable paper asking for readers' experiences with models fitted with flexible tails for controlling vertical and horizontal flight, it may interest him and others who have written on the subject to know that as far back as July, 1903, I made and demonstrated a model fitted with a flexible tail to Eric Stuart Bruce, then secretary of the Aeronautical Society.



The model was steered to right or left, raised or lowered according to the twist on the tail relative to the front planes. The design for this machine won the first prize in an open competition in 1903, presented by the *Illustrated Scientific News*. I patented the idea in 1902. A sketch of the tail fitted to the 1903 model I enclose, showing controlling cords above and below the tail.

26D, Clarges Street, W. WILLIAM COCHRANE.

OUR READERS ASK:

FOR what reason does a piece of cardboard launched with a spin fly better than if thrown without rotation? [1373]

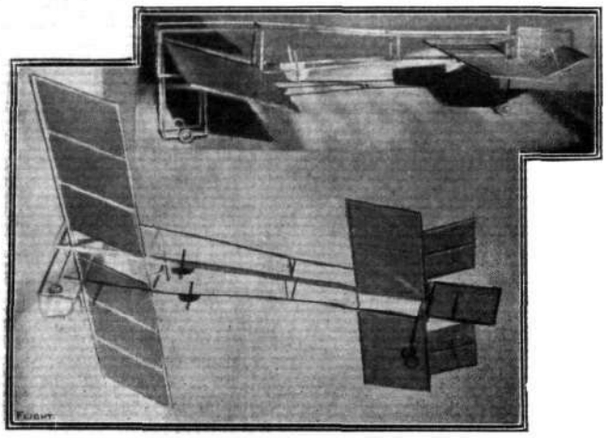
A piece of cardboard launched with a spin makes a better flight than one launched without the spin for the same reason that a spinning bullet fired from a rifle makes a better trajectory than one fired from a smooth-bore gun. The energy in the spin confers stability of attitude on the projectile, disturbing influences being resisted by its gyroscopic force.

IS plated wire worth using on models? [1374]

MODELS.

Model Construction.

[1375] I send two photographs of a model that is entirely my own design and is interesting on account of the elevator on the tail. The overall length is 41 ins. and the main planes measure 47 ins.



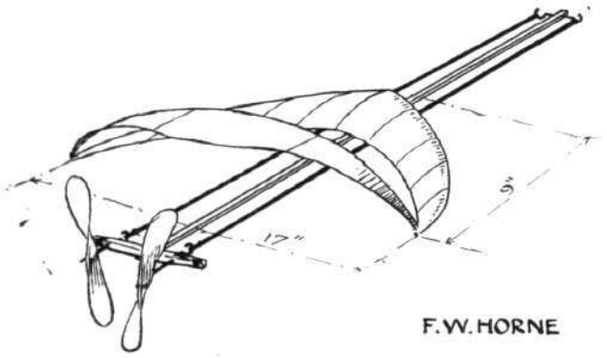
by 9 ins. The tail plane measures 25 ins. by 6 ins. The timber is $\frac{3}{16}$ in. birch.

The model rises from the ground with a run of six yards and has flown 100 yards.

Urmston. M. HUGHES.

Experimental Model.

[1376] Enclosed is a sketch of a model built on the lines of the Sloan biplane, as the result of experiments with paper gliders. The lower plane has a positive angle of incidence right up to the tip, and the arched rear plane is in reality a non-lifting tail. In most of my



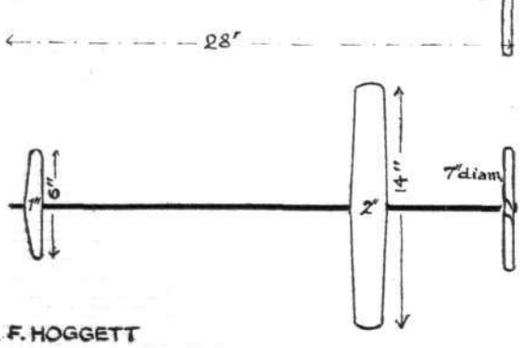
F.W. HORNE

models the distance between the centres of the elevator or tail and main planes is about $1\frac{1}{4}$ times the span of the elevator or tail, but in this model the proportions are reversed. I have been very struck with its flight capacity.

Wilmslow. F. W. H.

10-oz. Model.

[1377] Enclosed is a sketch of a simple 10-oz. model with which



F. HOGGETT

I have obtained flights of 130 yards. It is made entirely of wood, and is driven by 4 yards of $\frac{1}{16}$-in. elastic in five strands.

Leeds. F. HOGGETT.

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IN response to numerous requests, the publishers of FLIGHT have arranged to print a limited number of copies each week upon art paper, thereby enabling the high quality of the illustrations and matter to be fully appreciated. These can only be supplied by subscription, the annual charge, post free, being: United Kingdom, 15*s.*; Abroad, 20*s.* Present subscribers can secure these copies by paying the difference *pro rata* of their unexpired subscriptions. Application should be made to the PUBLISHER, 44, ST. MARTIN'S LANE, W.C.

PUBLICATIONS RECEIVED.

Announcements. Educational and Social, for the Session 1911–1912. The Northampton Polytechnic Institute, St. John Street, London, E.C.

Natural Stability in Aeroplanes. By W. Lemaitre. (The S. and C. Series, No. 39.) London: E. and F. N. Spon, 57, Haymarket, S W. Price 1*s.* 6*d* net.

"*Langley Memoir on Mechanical Flight.*" Part I (1887–1896), by S. P. Langley. Part II (1897—1903), by Charles M. Manly. Washington, D.C., U.S.A.: The Smithsonian Institution.

Catalogue.

The "Grey Eagle" Motor. R. O. Rubel, Jr. and Co., Louisville, Kentucky, U.S.A.

NEW COMPANY REGISTERED.

De Bolotoff, Ltd., 150, Mansion House Chambers, 11, Queen Victoria Street, E.C.—Capital £10,000, in £10 shares. Acquiring from Serge Vincent de Bolotoff two triplanes and accessories and his interest in a patent relating to explosion engines for aerial machines. First director, S. V. de Bolotoff.

Aeronautical Patents Published.

Applied for in 1910.

Published September 28th, 1911.

21,114. A. RUTT. Anti-deviating apparatus for aeroplanes and airships.
21,231. R. MCMULLAN. Automatic balancing aeroplane.
22,401. E. D. APPLEY. Flying machines.

Applied for in 1911.

Published September 28th, 1911.

9,884. E. MAGLIONE. Multi-cellular aeroplane.

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